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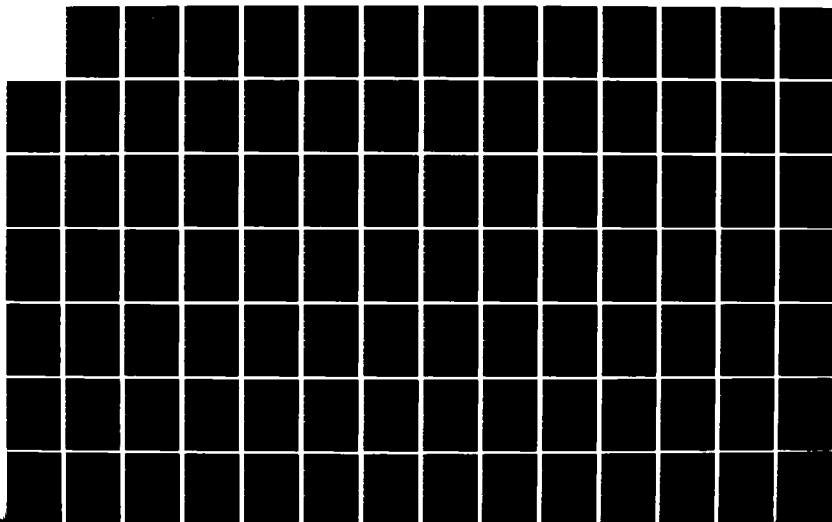
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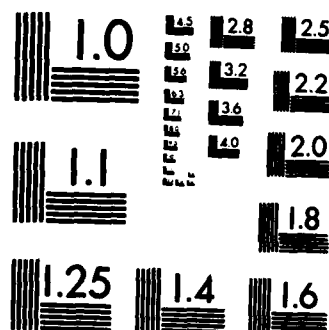
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MACROECONOMICS AND PUBLIC POLICY  
(Revision)

Richard T. Taliaferro

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MACROECONOMICS AND PUBLIC POLICY  
(Revision)

A School of Systems and Logistics AU-AFIT-LS Technical Report

Air University

Air Force Institute of Technology

Wright-Patterson AFB OH

By

Richard T. Taliaferro

April 1984

APPROVED FOR PUBLIC RELEASE APR 1984

7 APR 1984

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Director, AFIT/LS

The views expressed in this report are those of the author and do not reflect the official policy or position of the Department of Defense of the US Government.

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SECURITY CLASSIFICATION OF THIS PAGE

## REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE			
4. PERFORMING ORGANIZATION REPORT NUMBER(S) AU-AFIT-LS-2-84		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION School of Systems and Logistics AF Institute of Technology		6b. OFFICE SYMBOL (If applicable) AFIT/LS	
7a. NAME OF MONITORING ORGANIZATION		7b. ADDRESS (City, State and ZIP Code)	
5c. ADDRESS (City, State and ZIP Code) Wright-Patterson AFB OH 45433		8. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	
8c. ADDRESS (City, State and ZIP Code)		10. SOURCE OF FUNDING NOS.	
11. TITLE (Include Security Classification) MACROECONOMICS AND PUBLIC POLICY (REVISION)		PROGRAM ELEMENT NO.	
12. PERSONAL AUTHOR(S) RICHARD T. TALIAFERRO		PROJECT NO.	
13a. TYPE OF REPORT Technical Report		TASK NO.	
13b. TIME COVERED FROM _____ TO _____		WORK UNIT NO.	
14. DATE OF REPORT (Yr., Mo., Day) April 1984		15. PAGE COUNT 375	
16. SUPPLEMENTARY NOTATION			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB. GR.	Economics, public policy, economic policy, business cycle, economic growth, international trade, financial intermediation system, circular flow of economy (SEE REVERSE)
05	03		
19. ABSTRACT (Continue on reverse if necessary and identify by block number) Any industrial economy is limited in what it can produce by its natural endowments, its labor force, the state of its technology, its productive plant capacity and the exchange it makes of some of its output for that of the other national economies of the world. The value of its gross national product relative to its population is one measure of the economic well being of a nation. Within the institutional framework of an economy, the value of any one final good or service is basically determined by its desirability relative to other goods and service among all those who can exert a demand for it in the marketplace. The ability to exert a demand for a good or service in turn reflects the way in which the value of GNP is imputed and distributed by institutional arrangements among those having a hand in producing it. The productiveness of an industrial economy is manifested by the rate at which it consumes goods and services and the rate at which it adds to its productive capability. Additions to capital make possible increased output, but there must be an effective demand for, and consumption of part of the increased output (SEE REVERSE)			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS <input type="checkbox"/>		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL		22b. TELEPHONE NUMBER (Include Area Code)	22c. OFFICE SYMBOL

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## INDUSTRIAL DEVELOPMENT

1. Industrialized Economies

In the pursuit of economic livelihood, we who live in the highly industrialized areas of the world have organized ourselves into complex national economies dependent upon sophisticated and pervasive technologies. By the use of those technologies, we are enabled to transform the earth's natural resources into an output of useful goods and services.

Any national economy is limited in what it can realize from its productive efforts by its natural endowments, its labor force, the state of its technology, its physical plant capacity and the exchange it makes of some of its output for that of the other national economies of the world. The monetary value of its output of final goods and services in any one year, that is, its gross national product, relative to its population is one measure of the economic well being, or living standard, of a nation.<sup>1</sup>

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<sup>1</sup>Gross national product is defined as the market value of the output of final goods and services produced by the nation's economy in a year. Final goods and services in turn are those products that are purchased by firms and individuals and that are not intended for resale in that year, and those goods and services provided by government. We will discuss this at greater length in the next chapter.

Of course, the value of total GNP says nothing about its composition, how it is distributed or the ultimate impact of its production and consumption on the national economy. Within the institutional framework of an economy, the value of any one final good or service is determined by its desirability, relative to other goods and services, among all those who can exert a demand for it in the marketplace. The ability to exert a demand for a good or service in turn reflects the way in which the value of gross national product is imputed and distributed by institutional arrangements among the various sectors of the economy, that is, labor, owners of capital and land, entrepreneurs and government.

The productiveness of an industrialized economy is manifested by the rate at which it produces and consumes goods and services and the rate at which it adds to its output capacity. That capacity is capital and is made up of accumulated knowledge, production techniques and organization as well as producing plants and the availability of services. It also includes supporting networks of communications, transportation facilities, energy utilities and such, commonly referred to as economic infrastructure. Taken together, capital makes possible the movement of natural resources through a succession of industrial transformations into a proliferated array of finished products.

The accumulating capital that we see around us and the consumption that it makes possible are uniquely tied to one another as we shall see. Additions to capital make possible increased output, but there must be an effective demand and consumption of



part of the increased output so that the additions to capital will pay for themselves and so that there will be motivation for yet further additions. At the same time, if capital is to accumulate, if productive capacity is to increase, not everything produced by it can be consumed. That is, capital must be used in part to produce more capital.

Since the Industrial Revolution, a period in European history roughly from 1750 to 1825, not all the output produced in each year by advancing economies has been consumed immediately.<sup>2</sup> Instead, some significant fraction has been set aside in the form of additions to existing productive capacity. Thus, plant and equipment have been added, new inventions have been exploited, networks of communications and transportation have been expanded, productive techniques have been improved, knowledge and labor skills have been enhanced. All this has diverted some resources from output for consumption year to year, but the result has been successively expanded productivity or output per worker. This process has had a profound effect on the economy of the United States.

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<sup>2</sup>It is understandable that an all-labor economy could never accumulate any capital if its output went entirely to satisfy consumer needs such as food and clothing. In an exchange system only if some of the value of yesterday's output could be set aside as today's demand for capital to be built by some of the available labor would any capital be accumulated. For differing views on technological growth, see Kuznets, S., Modern Economic Growth, New Haven: Yale University Press, 1966, pp. 1-59; Schmookler, Invention and Economic Growth, Cambridge: Harvard University Press, 1966, Ch 3 & 4. Mishan, E. J., Technology & Growth The Price We Pay, New York: Praeger Publ. 1971, passim.

Putting the phenomenon in perspective, Table 1-1 shows how our gross national product has been partially divided over the last 100 years between products we consumed and products that added to our total capital investment.

We observe that capital accumulation has proceeded at approximately a three percent annual rate, but that investment in capital has not been a constant fraction of GNP year to year. We will see later that variations in capital investment have been of crucial significance in the short-run workings of our economy and the increase of government intervention therein. Table 1-1 also tells us that capital and total output have grown somewhat at the same long-term rate, while output per worker has grown at the compound rate of about  $2\frac{1}{2}$  percent per year. The link between capital and output tells us apparently that the output of employed labor has been dramatically enhanced by the use of capital. The increasing productivity of employed labor in this century has resulted in the growth of its real wage, but the table leaves aside the question of differences in wages and unemployment in the labor force that might exist at any one time.

Neither does the table tell us whether or not each individual in the labor force is able with his or her real wage to get a share of output sufficient to meet the essentials of life. As for whatever unemployment might exist, from the table we know not why it would exist, nor how the unemployed are enabled to satisfy their recurring economic needs. The table does not say anything to us about the composition of increasing output relative to the

TABLE 1-1  
Economic Growth in the U.S., 1875-1975

Year	\$billions (1900\$) GNP	\$billions consumption (1900\$)	Accumulated Capital (Tangible Assets) (1900\$)	Total Com- pensation Mfg Produc- tion Worker Index	Output per Manhour Index
1980	218.3	139.4	803.3	560.2	578.6
1975	181.9	116.8	670.5	573.3	559.3
1970	167.0	105.1	592.5	564.5	518.0
1965	150.7	95.2	542.6	527.9	471.6
1960	120.9	87.8	464.1	478.1	393.9
1955	107.5	68.7	358.8	428.3	368.3
1950	81.1	60.8	344.2	360.6	315.5
1945	66.1	53.1	228.1	330.7	286.0
1940	54.3	42.2	223.9	268.9	223.0
1935	41.7	35.4	207.5	221.1	194.2
1930	42.6	35.5	222.0	177.7	175.4
1925	42.8	33.6	173.9	163.7	164.7
1920	33.4	25.9	133.9	154.6	140.8
1915	29.5	23.3	156.5	124.7	120.9
1910	26.0	20.7	126.9	116.7	115.8
1905	22.9	17.7	112.8	108.3	107.7
1900	18.1	13.9	90.2	100.0	100.0
1895	14.0	10.9	82.4	92.2	91.2
1890	12.2	9.4	63.2	89.2	82.2
1885	10.3	8.2	48.3	87.6	69.5
1880	8.4	6.7	38.3	85.3	67.0

Sources: U.S. Bureau of the Census, Statistical Abstract, 1983, pp. 418, 419, 538, 773; 1976, pp. 371, 394, 395, 428; Historical Statistics of the U.S., Colonial Times to 1957, 1960, pp. 95, 139, 142, 150, 151, 378; Long Term Economic Growth 1860-1965, 1966, p. 203, Washington DC, U.S. Government Printing Office. All values converted to 1900 as base year by the author.

demands of the economy. In any industrialized economy, some part of its output is produced to satisfy objectives of government programs, that is, to satisfy the need for public goods and services. But the table does not disclose that in addition to us. Nor can we tell how much of the accumulated capital at any particular time might have been lying fallow because of changes in demand for output after increases to capital had been made.

## 2. The Advent of Free Enterprise

In the context of civilized history, industrialization and the capitalistic system have matured with a rush. As observed earlier, what we have around us and the way in which we now live stem from the Industrial Revolution. We live in an economic system that got its first impetus a mere 200 years ago. And yet the differences that exist are enormous. Before that, of course, there were inventions, new discoveries and changes in the way things were done. However, there was a gradualness to the way in which things moved in times past.

Then, suddenly beginning in the eighteenth century things picked up speed. Life expectancies in Europe were dramatically increased and populations grew rapidly. We seized upon the use of machine power to alter radically the way in which goods were made. We learned how to exploit the immense natural resources of the New World. Taken together, these resulted relatively quickly in an expanding increase of output. Some benefitted greatly, but others did not fare very well from the increased productiveness of the developing capitalistic economies. At the same time, as the scale

of output was increased, serious problems were later created that seemed to contradict the great expectations of the late eighteenth century.

Two hundred years ago, what eventually were to become industrialized economies of Western Europe, were emerging from the era of Mercantilism, a system of commerce and trade characterized by an extreme degree of government intervention in private economic affairs. The extent of government intervention differed among the various countries, but basically Mercantilism had as its aim the reinforcement of the authority and power of the State, which, of course, in those days were embodied in a monarchy and a landed aristocracy.<sup>3</sup> To achieve that aim, the State enforced a centralized control and a system of taxation over internal economic affairs and foreign trade in the expectation of acquiring a growing gold and silver horde in the royal treasury. According to Mercantilist doctrine, foreign trade should result in a net accumulation of precious metals.

In pursuit of that objective, during the seventeenth and eighteenth centuries, Mercantilist countries such as France, Holland, Spain, and England set up restrictions on foreign imports while encouraging export trade so that there would be a net inflow

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<sup>3</sup>For a full description of the era of Mercantilism, see Heckscher, E. G., Mercantilism, transl. by M. Shapiro, London: Allen & Unwin, 1953, Vols I & II; Bogart, E. L., Economic History of Europe 1760-1939, New York: Longmans, Green & Co., 1942; Day, C., Economic Development in Europe, New York: Macmillan, 1942; Ogg, F. E. & Sharp, W. R., Economic Development of Modern Europe, New York: Macmillan, 1930, (reprinted 1969).

of gold and silver. Obviously, not all those countries in trading with one another could achieve that objective simultaneously, and as a matter of fact, Mercantilist goals were only intermittently realized by individual countries. The survivability of Mercantilism was reinforced by the vast colonialized treasure of natural resources of the New World, Africa and the Indian subcontinent. The European countries with claims on overseas resources developed systems of trade in which raw materials, spices and gold and silver flowed into Europe while finished goods flowed out. Among themselves they sought to inhibit the trade in each other's manufactured wares.

Time and circumstances, however, conspired to set aside Mercantilist practices. The Industrial Revolution was at hand and its gathering momentum simply could not be contained by the Mercantilist State. In England, a fortuitous combination of a widening oversea market for manufactured goods, dramatic changes in agriculture, commercially feasible inventions, large coal and iron deposits and advances in science thrust that country into the forefront of the Industrial Revolution.<sup>4</sup>

Out of the expanding market for manufactured goods, particularly textiles, and the upheaval in manufacturing methods, a new and growing class of industrialists emerged.

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<sup>4</sup>The history of the Industrial Revolution are common knowledge. A number of interesting treatments is listed in the references for this chapter. See, for example, Birnie, A., An Economic History of Europe 1760-1930, London: Methuen & Co., 1933.

It was made up at first of merchant entrepreneurs who sought to satisfy the increasing demand for textiles by seizing upon inventions in manufacturing methods. Originally, middlemen who contracted for woollen and cotton textiles with many craftsmen in the cottage system, had accumulated profits from their commerce and were able to invest in newly invented machinery installed under one roof and operated by a force of workers for wages. They were successful in their new ventures because the revenues they realized from their burgeoning output far exceeded the cost of their production.

The story of the industrial upheaval in England is well known. Invention followed invention, innovations in manufacturing methods succeeded one another as the growing demand for output permitted increasing specialization of effort and scale of production. The factory system supplanted the cottage system of manufacture and before long a new class of entrepreneurs represented manufacturing in England. Because of the great advantage they held over the manufacturing methods of other countries at that time, their output was less costly, and they needed to fear no competition from abroad. Consequently, they exerted pressure for a reduction of government restrictions that had earlier been imposed on trade to protect the now outmoded cottage system. They were joined by the growing commercial class who sought to dissolve the exclusive State franchises in foreign trade that a few companies enjoyed.

The Mercantilist restrictions on economic activity in England were fewer than those existing in the Mercantilist

countries of the Continent that had built-up in one form or another during the transformation of Europe from feudalistic societies to nation states. In those countries, an amalgam of the old craft guild rules, feudal traditions and Mercantile regulations severely limited growth in manufacture and trade. But they, too, little by little were weakened as entrepreneurs sought to exploit growing opportunities in trade and manufacture.

Historians tell us the ascendancy of the Industrial Revolution and laissez-faire or free enterprise hinged on the availability of growing markets for manufactured goods, on generous supplies of raw materials and labor, and on inventions that could be exploited in continuing increase in the ability to produce. We emphasize that in this process, all that was produced was not consumed, or, what amounts to the same thing, some part of realized income was set aside as saving for investment in capital.

The increasing demand for manufactured goods promising future profits together with the ability of entrepreneurs to set aside out of their revenues some amount for increasing their productive capacity made economic growth possible. This meant essentially that entrepreneurs with their accumulating savings could attract available labor and resources to make goods-producing capital. Some of that labor and resources were devoted uniquely to inventions that focused on the application of power to enhance labor's productivity. This permitted increases in the scale of output which in turn opened up opportunities for the specialization of effort from which further efficiencies were realized.



The success of the rising middle class in stripping away the obsolescent restraints of Mercantilism first in England and then on the European continent reinforced the persistence of the ingredients necessary to industrialization. In realistic terms, the Industrial Revolution fed on itself. And as it did this, as the accumulation of capital continued, as markets for finished goods demanded yet further output and as entrepreneurs scrambled to satisfy the apparent insatiability for goods, the face of civilization was changed in that part of the world.

### 3. The United States and Free Enterprise

Of more importance to us, however, the ingredients of product markets, raw materials, labor, inventions and politically conducive policies in this country enabled the Industrial Revolution in time to take hold here. Because of the absence of entrenched Mercantilist practices and the antagonisms of class struggle in this country after its independence, the Industrial Revolution brought a more complete embodiment of the laissez-faire doctrine. There was a general feeling enterprise should be free of government intervention, that there should be no restrictions on trade, that an unhampered economy would forestall monopoly. But the peculiar circumstances within the new republic and its relations with Europe, limited its early adaptation to industrialization.

After the Revolutionary War, the United States, as a former colony of England, was very much dominated by the agricultural economy of the South with the added uniqueness of having an untapped wealth of fertile land at its back door. Its

industrial transformation which was destined to occur, was hampered because England had built up its manufacturing capabilities and the former colonies had been part of the necessary market making up the enlarged demand needed for the factory system to pay for itself. In the English system, the colonies paid for the manufactured goods they imported from the mother country with exported raw materials such as tobacco, cotton, rice, and pig iron. In order for the system to work to its advantage, the mother country discouraged the movement of skilled industrial mechanics, and prohibited the export of machinery or its design.<sup>6</sup>

In addition, there existed a great disparity initially in labor conditions between England and the United States. England had a substantial advantage in her developing factory system by virtue of cheap labor resulting from the substantial growth in population during the eighteenth century and the dispossession of the rural small landholders (yeomen).<sup>7</sup> The availability of labor for factory work was augmented by the displacement of the cottage system. Would-be entrepreneurs in the United States, on the other hand, faced a lack of cheap labor because the abundant and fertile, though wild, land on the western frontier acted as a magnet in drawing population away from the relatively built-up areas along

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<sup>6</sup>Underwood, H. U., American Economic History, New York: Harper & Bros, 1954, p. 84, 246-47. Reese, J. E., An Economic History of the United States, New York: Houghton Mifflin, 1965, p. 105. Other U.S. histories from which this discussion is drawn are listed in the references for this chapter.

<sup>7</sup>Birnie, Ibid, pp. 19-21.

the Atlantic seaboard. Consequently, there was no immediate concentration of available labor at potential mill sites.

At the same time, in the absence of a developed transportation system and the restrictions to entry into other markets served by England, there existed only local markets for manufactured goods. Then, too, much of the money available for financing entrepreneurial ventures in manufacturing was attracted to the more certain opportunities in commercial sea shipping and large scale farming in the southern states.

In brief, several necessary ingredients for the industrialization process to take place were initially missing. Access to industrial machinery and know-how was limited. There was limited saving out of income available for investment in mills of one sort and another, a pool of cheap labor was lacking, and only a primitive transportation system was in being. Nevertheless, the potential for the industrial transformation asserted itself. There was a vast store of natural resources, the United States was an independent country, large and growing larger in geographical area devoid of hampering governmental restrictions on internal trade and manufacture, its population was increasing and the migration of population from Europe would in time add to the impetus for population growth. Finally, the administrations in power of the federal government, together with state governments, would be generally disposed to policies favoring the growth of business and industry. These policies involved protective import tariffs, availability of credit, avoidance of interference in the operation of product

markets or employment of labor, and encouragement of economic development by significant transportation construction subsidies.

In considering this overall development and what made it possible, we should keep several things in mind. First of all, inventors and entrepreneurs had to have a prospect that a profit could be realized from industrial and commercial ventures, and of course, some of these prospects had to materialize for new investment to add to accumulated capital. Then, too, means for financing those ventures had to exist. If entrepreneurs were to acquire raw materials, if they were to have machinery built and buildings erected, if they were to pay wages, if they were to put transportation systems in place, they had to have money as a medium of exchange. This amounts to saying that in one way or another saving had to be put at their disposal. The setting aside of some part of an economy's income as saving and the use of that saving by entrepreneurs to invest in productive capital, we refer to as the saving-investment process. It has been the key to economic growth.

Today, the amount that our economy sets aside as saving is comprised of such financing vehicles as retained corporate profits, personal saving, insurance premiums, pension plan payments and purchases of newly issued shares in corporate ownership. The means to finance promising commercial and industrial ventures in the United States during the first half of the nineteenth century came from entrepreneurs' own saving, from England and Europe, from credit extended by a commercial banking system and private bankers,

from state governments and in time from savings of individuals through nonbank financial intermediaries such as savings banks and insurance companies.

In this respect, the credit extended by the banking system for investment represents a means by which entrepreneurs can wedge their way into the flow of economic activity and by making claims on output they can force consumers to save by giving up consumption they otherwise would make. Thus, it makes no difference how capital investment is financed; it must be matched by an equivalent saving out of total income.

The financing requirements of roads, canals and railroads so necessary for developing markets were beyond the reach of individuals and partnerships. Consequently, the individual state governments, particularly in the northeast, eager to foster industrial development, became a combination of entrepreneurs and financiers themselves. The Erie Canal, 363 miles long, was built and financed by the state of New York, at a cost of \$7,000,000. The state of Pennsylvania built and financed the Pennsylvania Canal, 394 miles long, at a cost of \$10,000,000. Those two states and others such as Ohio and Maryland also created private stock corporations by special legislative acts to build canals and railroads in the 1830's, 1840's and 1850's, and concurrently helped to finance the ventures by issuing and selling bonds to merchants and professional men at large and to foreign interests. Taken together the various means of financing both industrial and transportation

expansion reflect in part the saving-investment process that had to be going on in the economy for capital to accumulate.

In exploiting the unfolding opportunities on the American continent, afforded by the natural resources, cheap labor, and expanding markets, entrepreneurs were free to commit capital and to take advantage of market conditions and labor conditions to their benefit. As the industrial economy of the nation grew in importance, the spirit of free enterprise increasingly permeated the American political system. As a matter of fact, monopoly conditions in industry had not yet manifested themselves, large scale production did not yet permeate industrial life as it did by this time in England, and the great western expanse was associated with the freedom of choice of the individual. Among the general public, free enterprise had a great emotional attachment in spite of the gathering doubts about industrialization.

Few if any restrictions initially were imposed on the conditions under which industrial capital operated. Free enterprise in essence meant the private ownership of capital, the unrestricted employment of labor, an unregulated product market and a price system implemented by monetary exchange. However, as we have already seen, as in the case of the railroads and the canals, free enterprise also required that government come to the aid of the industrial system with financial resources, favorable taxation and protective import tariffs. As was mentioned earlier, the development of industry and trade, particularly in the North, was unhindered by internal customs barriers of any significance; at the same

time, their development unquestionably was abetted by the restrictive import tariff policy of the United States. Beginning in 1812, and continuing throughout the nineteenth century, protective tariffs worked to the advantage of American industry by shielding it from European competition. That our tariff policy worked to the great disadvantage of southern agriculture and that it was one of the causes of the Civil War is a matter of history. That in the absence of a restrictive policy, the course of history would have been radically altered is a matter of conjecture.

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## THE SOCIALIST IMPERATIVE

1. Post-Civil War Development in the U.S.

Until the Civil War, the economy of the United States was primarily agricultural, but its industrial development was taking form. As we have seen, industrial development required an indulgent government. It also required product markets, technological advances, a saving-investment process, adequate labor supply, abundant natural resources, a monetary exchange system and credit availability. Technological innovation was drawn from England and then built upon; population growth and limited immigration provided labor; canals, railroads and pikes created expanding product markets and provided easy access to raw materials. Entrepreneurial demand for investment financing was satisfied by domestic merchant profits, bank credit and foreign money. Then, too, in the early days, the isolation of the United States by the Napoleonic Wars and the War of 1812 limited foreign competition in manufacturing and allowed domestic manufacturing to get a start.

On the surface, the years after the Civil War leading into the twentieth century would seem to have enriched all sectors of the United States. A comparison of the statistics of 1860 and 1900, for example, would reveal a 65 percent increase in the real wage of nonfarm employed labor while showing a twofold increase in accumulated capital. Gross National Product in 1900 was not only four times larger than it was in 1860, but it represented a vastly

wider range of finished consumable products. The apparent great enhancement in the average standard of living seemed justification enough for the free enterprise system, in which industrial inventions and innovations had been seized upon by entrepreneuring firms to increase the scale at which output was produced. As the scale of output was increased to satisfy growing demand, the real cost to produce fell sharply.

At the same time, large scale production under single firm management was made possible by the limited liability corporate form of organization whereby the increasing fixed capital requirements were satisfied by money originating in a multitude of sources.<sup>1</sup> The increase in the scale of output extended to a range of industries, notably textiles, food and kindred products, steel, machinery and implements, lumber and lumber products as well as mining and construction.

But a closer inspection of the statistics of the era and a reading of its history suggests something quite different.<sup>2</sup> One

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<sup>1</sup>The corporate form of organization had been used infrequently before the Civil War and until liberalizing state legislation began in the 1830's, was found primarily in the construction of canals, pikes and railroads. Until Connecticut passed a general act permitting incorporation of any firm, incorporation was possible only by special legislative act. As the capital demands for output grew beyond the capabilities of a proprietorship or partnership, the number of incorporations increased. The corporate form had the advantages of permanence, limited liability and massive financing.

<sup>2</sup>See, for example, U.S. Bureau of the Census, Historical Statistics of the U.S., Colonial Times to 1957, 1960; and Schreiber, H. N., et al, American Economic History, New York: Harper & Row, 1976.

readily gets the impression that there were manifest flaws in the fabric of free enterprise and that a variegated reaction set in against the system. The reaction led in time to federal legislation limiting the free play of business practices and socializing the way in which the private economy operates. As it turned out, the initial foray of the federal government into the workings of the private economy was hardly sufficient, and as the aggravating flaws in free enterprise persisted, the federal government was eventually drawn into the economic arena as a full-fledged participant.

With the relatively sudden transformation of business and industry into the corporate form of organization and large scale mass production, the railroads and industrial firms became large entities. In major industries, relatively few firms accounted for nearly all industry output. Resultingly, each firm's output was a significant portion of its industry's output and changes in its product price or output had a measurable impact on demand for its rivals' output. In following the profit-maximizing rule, a large firm did so to the disadvantage of its rivals. This led to retaliatory price and output adjustments by rival firms to the detriment of all the firms. At the same time, investment in large-scale fixed capital by the individual firm tended to be irregular and tended to be made in lumps. This in itself induced undulations in total output and national income, and as firms sought to recover their investment from falling revenues, they inevitably indulged in confrontation at one another's expense. From time to time, output

of consumer and investment goods would exceed aggregate demand, and prices would fall sharply, precipitating lower profits and losses to industry firms.

In this respect, the railroads being the first large firms, led the way with rate wars, rebates and rate discriminations. Later, manufacturing firms resorted to price wars and blatantly predatory practices in seeking to eliminate the competition of their rivals. The railroads after a time came to the realization that they would all be better off by agreeing to pool their efforts and share their markets instead of fighting one another. The pools were the first of various business combinations aimed at controlling product markets. In time, virtual monopolies were created as large firms organized themselves into trusts under single management control.

The concentration of industrial firms and the railroads and their collusion in setting prices and rates had a particularly adverse effect on small businessmen, farmers and labor. Small businesses in a number of industries found their numbers shrinking and their profits falling, while farmers experienced falling prices for their products relative to the prices for manufactured goods and transportation costs. As the output of the economy became more and more industrialized, they saw themselves at an increasing disadvantage. Labor, at that time in a relatively weak position at the bargaining table, could observe its share of growing output shrinking. Wages were not keeping pace with productivity.

The real wage of nonfarm labor increased by about 65 per- cent in the 40 year period from 1860 to 1900. But in spite of the long-run increase in real wages, free enterprise and the increasing scale of production seemed to mean a diminishing share of growing output, irregular employment, economic insecurity and unrelieved severity in living and working conditions for the industrial labor force.

In 1860, nonfarm employment was less than 40 percent of a total employment of about 10,000,000. By 1900, nonfarm employment had increased to about 20,000,000 out of a total employment of 29,000,000. Nevertheless, in spite of the overall expansion of industrial output, the free enterprise system appeared to be unable to bring about a just distribution of output.

The real wage of the industrial worker, even though growing, nevertheless, was inadequate to assure the basic necessities of life. In reality, the industrial worker barely scraped by. At an extreme disadvantage in bargaining for wages with the large firm, he was in fact producing an output from which he was receiving less than his fair share. The machines he built, the coal he mined, the steel ingots he poured, the structures he erected and the many other products he had a hand in making all added to the wealth of the economy, but he found that the economy operated much like a giant company store. The value of the things he produced exceeded what he was paid for producing them, to the general enrichment of the producing firms. That is to say, the aggregate revenue of producers was apportioned in such a

way that the industrial worker realized only enough purchasing power to keep himself and his family at a subsistence level. Unquestionably, the industrial worker involuntarily financed a substantial part of the economic growth in the United States during the latter half of the nineteenth century.

In this interval, when the economic growth of the United States was so spectacular, wage-earning labor in the manufacturing plants, the mines and in construction became increasingly restive over the long hours, relatively low pay and aggravating working conditions to which they were subjected. This led to the organization of labor into craft and industrial unions which set as their goals the general improvement of pay, economic security and working conditions as well as the advocacy of political reform.

One of the reasons that large firms could prevail in setting wage levels in industry as well as working conditions was the generous supply of labor created by the waves of immigration primarily from European countries. Between 1860 and 1900, some 14 million people made their way to the United States, or roughly one third the average population of the country in that period. Although organized labor took root in the latter half of the last century, the achievements of national labor unions were limited.<sup>3</sup> Not having yet been legitimized, so to speak, unions tended to be

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<sup>3</sup>For detailed histories of the labor movement of this period, see Commons, J. R., et al, History of Labor in the United States, Vol II, New York: A. M. Kelley, 1966 (Macmillan 1918); Beard, M. R., The American Labor Movement, New York: Arno & the New York Times, 1969 (Macmillan 1931); and Dulles, F. R., Labor in America. New York: Thos. Y. Crowell, 1955.

at the mercy of the legal system. The use of the strike was inhibited by court injunctions obtained by employing firms as well as by the firms themselves by various means. Unionized labor, too, represented an insignificant proportion of industrial labor; consequently, large firms gave very little ground in terms of higher real wages and working conditions.

## 2. Central Government and the Economy

The combined agitation of farmers, small businessmen and labor and the traditional distaste in the United States for monopoly tended to sway general sentiment against the notion of laissez faire and towards government intervention. In response to growing reaction against the railroads, the Interstate Commerce Commission Act of 1887 was created. The law recognized the railroads as public utilities and provided for a federal regulatory agency to approve freight and passenger rates and schedules based on fair rates of return on invested capital. The Interstate Commerce Commission had the further authority to approve elimination or extension of railroad trackage.

Three years later, the Sherman Antitrust Act became law and made monopolizing or conspiring to monopolize a misdemeanor. It was later supplemented by the Clayton Antitrust Act and the Federal Trade Commission Act of 1914. While the federal government employed all three statutes to forestall growing concentration of industry and collusive price and output fixing arrangements among firms, it was unable to reverse the trend in industrial concentration. While it was successful in breaking up some large

firms and discouraging some mergers that would have created new large firms or added to others, the general oligopolistic nature of our economy entrenched itself at the turn of the century and since that time concentration has inexorably increased in degree.

Although federal government intervention in the private economy, once begun, continued to expand after the turn of the century, it did not mean the abrupt demise of laissez faire; business and industry remained free to develop, advance technologically, and expand new product markets. And in spite of federal antitrust, the concentration in business and industry intensified even further over the next three quarters of a century. The industrial essence of the economy today is basically what it was in 1900. The difference lies in the influence the federal government now exerts on the level of output and employment, the limits it has drawn on business and industrial practices, the ways in which it attempts to redistribute income, and the allocation it effects in output between public and private goods and services. Seventy-five years ago, federal government intervention in the private economy in these terms was miniscule.

But as the inability of the private economy to correct its own discrepancies became more and more apparent and as the economy became more sophisticated, federal government agencies were created to satisfy the expressed needs of the various sectors and to give them representation in government administration. The Department of Agriculture had been created in 1889, the Department of Commerce was born in 1903 and the Department of Labor in 1913. To bring a



semblance of stability to a commercial banking system that could not avoid serious financial crises, the Federal Reserve System was created in 1913, as well. To pay for the growing costs of the federal government, a progressive income tax system was enacted in 1913. In the years between the beginning of World War I and 1933, subsequent legislation extended federal government control over the private economy, but as late as 1930 the federal budget of \$3.4 billion represented slightly less than 4 percent of gross national product. Further restrictions had been placed on the conduct of business and industrial activity. The Federal Power Commission was created in 1926, the Federal Communications Commission in 1928. The La Guardia Act of 1929 gave further recognition to the rights of labor.

Nevertheless, on the eve of the Great Depression, the private economy essentially was still on its own. Transportation, communications and banking were regulated industries, and organized labor had achieved some of its goals with respect to working conditions and hours of work; but in spite of federal antitrust legislation, the trend towards concentration of industry begun 60 years before was still evident. During the first three decades of this century, too, there had been three major depressions and the real wage of manufacturing labor in 1930 was only some 10 percent greater than in 1900.

Great increases in national output had been achieved as Table 1-1 shows, and new industries in automobiles, chemicals, rubber, motion pictures and radio had come into being, but the

growing concentration in the marketplace was an increasingly aggravating factor in economic instability. The purely competitive character of the marketplace that free enterprise supposedly invoked was becoming less and less apparent, and instead of a flexibility in prices and wages ensuring the full employment of labor and productive capacity, economic activity led by investment surges had a tendency to bunch up every few years and then in the face of overexpansion of capacity relative to demand, to fall back at the expense of employment and output. The fallback was sizeable in contrast to what might have taken place in a competitive economy because prices and wages did not adjust automatically to compensate for the disparity between output and demand and the underlying malfunction of the saving-investment process.

Consequently, people were thrown out of work and output fell substantially; economic activity remained at low ebb until a combination of technological advance, changed expectations and changed availability of credit made increased investment attractive once again to entrepreneurs.

Nevertheless, for the first three decades of this century, the federal government was a bystander in economic events.<sup>4</sup> Then the industrialized economy of the United States was shattered by the worst depression in its history. Beginning with the stock

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<sup>4</sup> For some interesting discussions, see Hughes, J. R. T., The Government Habit, New York: Basic Books, 1977, passim; Johnson, E. A. J. & Krooss, H. E., The American Economy, Englewood Cliffs: Prentice-Hall; 1960, pp. 362-90; Davis, L. E., et al, American Economic History, Homewood: R. D. Irwin, 1969, pp. 132-51.

market crash of 1929, economic conditions turned downward and continued to worsen until in 1933, when 25 percent of the labor force was unemployed. The catastrophe that struck the nation in the early thirties ended forever the myth that the free enterprise, industrial system somehow could take care of itself. The way was opened for federal government intervention on a massive scale, bringing to an end the free enterprise system and considerably diminishing the philosophical ascendancy of laissez faire. In 1930, as already remarked, the federal budget was four percent of gross national product; 10 years later, the federal budget was more than 12 percent of GNP. During that interval of time, the relationship between the government and the private economy was radically altered. For the first time, massive government deficits were deliberately incurred in order to compensate for the deficiency of demand that had precipitated the downturn. From that time on, the use of compensatory fiscal policy was to be a mainstay of public policy.

While the federal government sought to encourage increased demand for output, a number of laws were enacted that had as their principal objective the redistribution of income. The Social Security Act of 1935 was the beginning of a public retirement income program, an unemployment compensation program, and other social welfare subsidies. Federal minimum wage standards became a reality with passage of the Fair Labor Standards Act of 1938. In agriculture, under the Agriculture Adjustment Act of 1935, the federal government instituted a program of crop price supports and acreage control to improve farm income. While not directly

implementing a redistribution of income, the Wagner Act of 1935, in guaranteeing organized labor's right to bargain with employers over wages and working conditions, had an impact on the share of output going to labor. In addition, the regulation of banking and finance was strengthened, and the forerunner of wage and price administration appeared in the agency of the National Recovery Administration.

Of course, at any particular time the demand that the federal government imposed on production by its expenditures automatically dictated an allocation of resources between public and private uses. Thus, as World War II approached, the role of the federal government in economic affairs in a few short years had been altered from one that was basically regulatory in character to one which was much more involved in economic affairs. It now had as its principal objectives the adjustment of income shares of output to effect a more equitable distribution, the determination of an allocation of resources such that final output of services would effectively satisfy both private and public wants to approximately the same degree, and the compensation for the disparity between the distribution of income from production and the demand for produced output.

### 3. Focus of the Text

In the time between the end of the Revolutionary War and the beginning of World War II, then, the economy of the United States was transformed from a rural, colonialized supplier of raw

materials into an urban, highly complex technocracy, more and more forced to depend on federal government economic policy. In 1781, most people were self-employed; in 1940, most people worked for wages. After the Revolution, there was little if any use of powered machinery; on the eve of World War II not only our industrial output, but agricultural output as well resulted from the use of powered machinery. In the late eighteenth century, men and women generally worked alone or in small groups. As we approached the middle of the twentieth century, the industrial factory employing thousands of production line workers was the mainstay of output.

The federal government originally followed a policy of minimal interference in economic affairs limiting its activity to national defense and subsidizing the construction of transportation arteries across an expanding national geography. But as technology made increased scale of output possible, industrial activity became more and more concentrated, precipitating internal antagonisms. Accordingly, the government at first increased its intervention by attempting to regulate business and industrial activities and practices. However, with the breakdown of industrial activity in the 1930's, the federal government vastly expanded its role beyond antitrust and regulation, attempting to adjust demand for output to that consistent with high employment by its taxing and spending programs, while seeking directly to bring about a redistribution of income through transfer programs.

Since the end of World War II, the intervention of the federal government in the economy has continued to increase. Meanwhile industrialization brought about by the saving-investment process has deepened. The economy is no longer on its own; it is very much under the sway of a powerful central government.

The federal government strongly influences the allocation of resources between private and public uses. It also causes a redistribution of income in comparison with that which would exist in the absence of its programs. Finally, through its taxing and spending, it profoundly affects national income and employment as well as the relative stability in prices. As we will see, the federal government complements and modifies its revenue and expenditure operations by its regulation of the nation's money supply through monetary policy.

The programs which the federal government operates to satisfy the economic needs of the society are varied in character, and for the most part are in redress of the limitations, shortcomings and inherent instability of the private industrialized economy. The federal government provides goods and services with varying degrees of a collective character to them; it places limitations on market concentration and restraints of trade in which industrial and business firms can indulge; it mandates the cost of environmental use by quality criteria for air and water; it seeks ownership in the economic infrastructure of the economy; it deliberately adjusts its revenue and spending to foster a demand for the output of goods and services that is compatible with full

employment; it pays for its spending by revenue derived primarily from a progressive personal income tax system and a corporate income tax system; and it transfers money income via its tax system from certain income groups to others while at the same time subsidizing in one way or another the economic activities of various sectors in the economy.

We think of the government's efforts in this respect in terms of fiscal policy and monetary policy primarily, but we also give consideration to its antitrust policy and its regulatory functions. For that purpose, we must first investigate the manner in which the private economy functions, and the means by which elements within it make an exchange with one another for goods and services they in the aggregate produce. This will provide us with the necessary background to investigate fiscal and monetary policy relative to their impact on the private economy, that is, in terms of functional or compensatory finance. We will then be in a position to evaluate the efficacy of individual programs within overall fiscal operation in terms of economic goals they are designed to achieve.

In the earlier sections of this chapter, and in Chapter 1, we have already touched upon those things that we will now investigate on more specific and detailed terms. Thus, aware that an industrialized economy does not consume all it produces, we set as one of our objectives a detailed understanding of how the income realized from that output is distributed, and how in turn demand for produced output is generated. At the same time, being aware

that time and technology work their influences on the composition and cost of output, we want some sensible means for comparing prices, wages, and output between two or more points in time; for that purpose, we need a system of indexing.

In any economy, there is a transformation of income generated from produced output into demand for the very same output that has been produced. The fact that the transformation does not follow a direct route from realized income to exerted demand or that it does not occur in a straightforward fashion is one of the reasons that the industrialized economy is apparently destined to follow a successive series of cyclical ups and downs in employment and output levels. Basically, the business cycle occurs repetitively because of technical peculiarities in productive capital and because those who save out of realized income at any one time are not identically those who want to invest in new capital. Thus, a disparity may exist between what is being siphoned out of realized income in the circular flow through a highly articulated financial intermediation system and what is being pumped back in as demand for output. The economy even with central government help is not sufficiently flexible or responsive to bring about necessary changes in saving and planned investment to grow economically at full employment. But grow it does as the result of the investment that takes place on a relatively continuous basis.

We will investigate the financial intermediation system in the United States that accommodates economic growth, and look at its role in the business cycle as well. At the same time, we will



see how monetary policy, or the control of the money supply and credit and interest rates, affects short- and long-term movements in output. We have emphasized that government taxing and spending play multiple roles in fiscal policy. In this text, we focus on the details of their compensatory nature, but we do not lose sight of their distributive and allocative character. Finally, a study of the industrialized economy would be incomplete without an examination of international trade.

As might be anticipated, there are divergent views on what motivates an industrial economy, and what the role of government should be. We will consider the two mainstreams of thought and examine carefully the assumptions of each, and to what extent they spring from common ground.

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## OUTPUT OF THE INDUSTRIALIZED ECONOMY

1. The Character of Output

An industrialized economy lives by what it produces. All of its output in one way or another, directly or indirectly, is intended to satisfy consumer demands. At any one time, to be sure, only part of what it produces will be absorbed directly by ultimate consumers. Nevertheless, the remainder will eventually play its part in meeting anticipated demand for consumption goods and services.

The range of products not destined for resale in the annual output of an industrialized economy can be categorized by industrial groups. Table 3-1 shows a generally accepted breakdown of output for the United States in 1980 by industrial grouping in terms of percentage of total output. Taken together, those industrial categories, including government, produce an output designed to satisfy demand for consumer, investment and public goods and services.

Consumer demand is generated by the income that individuals realize for their part in producing output. Table 3-2 shows how consumers in the United States spent income after taxes, savings and interest on debt in 1980. As can be seen, expenditures for food, beverages, and tobacco; housing, household operations, clothing, and transportation account for nearly three-fourths of total consumer expenditures. Tobacco, of course, is only a minor part of the first category of expenditures. It should be

TABLE 3-1  
Total Output by Industry, 1980

Industry	Percent of Output
Agriculture, forestry and fisheries	3.0
Mining	3.6
Contract construction	4.6
Manufacturing	22.1
Transportation	3.8
Communication	2.5
Electric, gas and sanitary services	2.5
Wholesale and retail trade	16.2
Finance, insurance and real estate	15.4
Services	13.0
Government and government enterprises	11.8
Other	1.5

Source: U.S. Statistical Abstract, 1982-83, p. 420

TABLE 3-2  
Personal Consumption Expenditures, 1980

Type of Product	Percent of Total
Food, beverages and tobacco	21.9
Clothing, accessories and jewelry	7.5
Personal care	1.5
Housing	16.0
Household operations	13.5
Medical care expenses	10.5
Personal business	5.5
Transportation	14.4
Recreation	6.4
Other	2.8

Source: U.S. Statistical Abstract, 1982-83, pp. 103, 422 & author's estimates.

understood the percentages shown are aggregate figures, and that any individual consumer may spend significantly more or less as a percentage of income from any one group of products than consumers as a whole. Thus, expenditures for food and housing are a far greater percentage of a poor family's income than those of a family of greater means. At the same time, the expenditures of a middle income family on personal care may be a more significant part of its budget than that of an impoverished family.

Consumer expenditures can also be categorized in terms of spending for durable goods, nondurable goods and services. Household furniture, appliances and automobiles are examples of durable consumer products, but as we shall see it is treated in a special way and only its annual wear and tear are considered to be consumed in any one year. Perishable foods along with clothing are an example of nondurable goods. Services include personal grooming, clothes cleaning and private education. Altogether, consumer demand makes up about two-thirds of all demand for output in the United States.

Investment is that part of output that is neither absorbed by consumer expenditures nor by government expenditures to satisfy the need by the economy for public goods and services. In the United States, investment is defined as the total of expenditures, planned and unplanned, that are made for plant, equipment and structures inventory increases and, surprisingly enough, residential construction. Table 3-3 shows what those expenditures were in the U.S. in 1980. The total figure for plant and equipment

includes not only additions to existing facilities, but replacement of worn-out and discarded facilities as well. Expenditures for inventory increases are those made by industrial and commercial firms in the products in which they deal. As we will see, those expenditures are made primarily to seize upon anticipated changes in demand and prices. Expenditures for residential construction are made by business enterprises as well as consumers. While they can certainly be looked upon as a consumer product, they nevertheless have great durability and add in a more or less permanent way to the wealth of the economy. Housing is not consumed forthwith but depreciates only over a long period of time, so it makes sense to look upon it as an investment and charge off in any one year only that part of it that has been worn away in use.

TABLE 3-3

Gross Private Domestic Investment in U.S., 1980  
(in billions of dollars)

Type of Investment	Expenditure
Plant and equipment	309
Residential construction	103
Inventory changes	-10
Total	<u>402</u>

Source: U.S. Statistical Abstract, 1982-83, p. 419

We see then that investment expenditures include substantially more than spending by business and industrial enterprises for additions to productive capacity, yet those additions are the

essence of investment and the hallmark of the industrialized society. They, of course, are only part of total capital accumulation, but it is primarily by the additions to plant capacity that the industrialized economy grows. We shall have considerably more to say about this later.

Government expenditures for goods and services constitute the third major component of final demand for output in an industrialized economy. In the United States that component is made up of the expenditures at federal, state and local levels of government. The expenditures are made to implement legislated programs for public goods and services. Table 3-4 shows a general breakdown of the expenditures excluding duplicative transactions that were made by the three levels of government in the U.S. in 1980. While state and local spending for public goods and services is substantial, somewhat to its exclusion, this text for the most part focuses on federal expenditures. We can observe from Table 3-4 that while there are common areas of expenditure, each level of government has its own specialty of offerings in public goods and services.

It should be understood that expenditures by government as shown in Table 3-4 include wages and salaries it makes to its own employees, and as we will see later in this chapter, their employment results in valued output of public goods and services. Government expenditures shown in Table 3-4 are those that are made to producing enterprises in exchange for goods and services that they offer for sale. Government at all three levels may very well

TABLE 3-4

Governmental General Expenditures, 1980  
(in billions of dollars)

Function	Total	Federal	State & Local
National defense and inter- national relations	149.5	149.5	
Space research and technology	4.9	4.9	
Postal service	18.2	18.2	
Education	156.7	23.5	133.2
Highways	43.2	9.9	33.3
Natural resources	36.9	31.4	5.5
Health & hospitals	46.8	14.6	32.2
Public welfare	93.3	47.7	45.6
Housing & urban renewal	18.3	12.2	6.1
Air transportation	5.7	3.2	2.5
Social insurance	6.4	4.4	2.0
Interest on general debt	76.0	61.3	14.7
Other	158.3	66.0	92.3
Total	815.9	446.6	369.3

Source: U.S. Statistical Abstract, 1982-83, p. 275  
(Total excludes duplicative transactions between levels of government.)



combine or modify purchased goods and services in one way or another to produce in final form yet other goods and services that it has been called upon through the electoral and legislative processes to provide the economy as a whole or only to designated sectors of the economy. The expenditures that the federal government makes for national defense are of this nature. The U.S. Department of Defense buys weapons systems, contracts for military bases and combines them with its own uniformed and nonuniformed employees to produce the public good of national defense. Any number of other similar examples could be cited. The significant aspect of government expenditures is that they are made, to a great extent, for goods and services produced by the private sector of the economy; but by virtue of those expenditures, the ~~goods~~ goods and services take on a public character as government becomes the agency through which they are consumed, so to speak, by the activities and individuals in the economy.

The industries that produce the annual output of an economy are distinct from one another not only in terms of the products they produce but in terms of volume of output, number of firms and rules of the marketplace. In the United States, the government exercises a great influence in each of those aspects of industrial organization. Most important to observe for our purposes here is that the producing sector of the economy has been divided into the regulated industries and those industries essentially subject only to antitrust policy.

The regulated industries are those industries that produce output of such a character that for one reason or another it is

legally subject to specially constructed market rules. Regulated industries produce output that is essential and basic to human needs and output that lends itself to economically large scale operation. Regulated industries also include those in which imprudence, fraud or mismanagement in general can have catastrophic consequences for the economy or a significant part of it. The regulated industries in the United States are the utilities, communications systems, transportation systems, banks, insurance firms, and nonbank financial intermediaries.

Utilities are primarily regulated by state and local government, and in providing gas, electricity, water and other such services generally operate with monopoly franchises in their geographical areas of operation. In exchange for exclusive franchises, they submit to regulation of the pricing structure for their output as well as their operational procedures. Monopoly franchises are generally absent in other regulated industries which are subject to both state and federal jurisdiction. Instead, they are characterized by limited competition among a few large firms. But the pricing policies and achieved returns on investment of industry firms are with some exceptions subject to the approval of regulatory agencies.

The nonregulated industries of the producing sector are free from direct government intervention in their operations; nevertheless, they are subject indirectly to substantial federal government influence. Firms that are large relative to the industries in which they operate are vulnerable to antitrust action whenever there is the suspicion that what they do is tending

to restrain trade and inhibit new firm entry. An original intent of federal antitrust legislation was to limit the concentration of industry output, and to forestall barriers to new firm competition in industries experiencing sustained and growing demand for output. Unfortunately, the seemingly ineluctable achievements of technology in terms of economies of scale rendered much of antitrust policy ineffective early in this century. Industry concentration has continued to increase up to the present day. Large firms grow larger until as in the domestic automobile industry, there is less than a handful left, and the leader works actively to avoid taking over any larger share of the market in order to make itself less vulnerable to antitrust action. Table 3-5 shows the trend in concentration among manufacturing firms in the U.S. in the recent past. It is somewhat indicative of the trend towards concentration throughout the economy. Much of this intensifying concentration comes from internal expansion of large firms, but a significant part of it results from the acquisition by already large firms of other sizeable firms.

TABLE 3-5  
Percent Share of Value Added of Largest  
Manufacturing Firms

	1947	1963	1967	1972	1977
Largest 50 firms	17	25	25	25	25
Largest 100 firms	23	33	33	33	35
Largest 200 firms	30	41	42	43	45

Source: U.S. Statistical Abstract, 1982-83, p. 783.

## 2. The Value of Output

The output that an industrialized economy produces has a value. That value is determined by the cost to produce the output and the preferences of consumers, investing firms and government.

Consumer preferences are determined by the personal utility that individuals assign to the products available for purchase in the marketplace, the price they must pay for those products and the income at their disposal. In economic theory, it is assumed that consumers are rational beings and consequently take care in evaluating the benefit they anticipate from consumption of a good or service. The benefit they anticipate is based to a large extent on their experience of the past and the blandishments of offering firms. As rational beings they also seek to get the most out of their spendable income. Thus, they seek to maximize utility from consumption. If they are to do this, they must allocate income such that the last dollar spent on each and every product achieves the same measure of satisfaction or utility. Accordingly, whenever relative prices of products in one's market basket change, the individual adjusts consumption of those products to bring into equality once more the ratios of utility achieved to income expended. From this we can deduce the well-known consumer demand curve which states that as the price of a good falls, the volume demanded rises.

At the same time, the consumer demand curve for a product may shift one way or the other as consumer preferences, prices of other products or incomes change. Consumer demand curves also

express the relative responses of individuals among each other and among the various products on which they expend income. Accordingly, the individual consumer may be relatively unresponsive to price changes in goods and services considered highly essential to livelihood and, seemingly contradictorily, in goods and services the expenditure of which comprises a minor part of total expenditures. Each individual is unique in preferences and thus the demand curve for any product will vary from one individual to another, but the combination of all individual demand curves expresses the relationship of price to the amount demanded by the economy as a whole for each product offered for sale in the marketplace. How much, then, that the community for consumers will absorb or demand of any one product is tinged with uncertainty at any moment.

The demand for investment goods, in particular the demand for plant and equipment by individual firms, to a large extent depends upon the anticipated return from their use. In other words, firms invest in plant and equipment because of the prospect of a profit to be realized from the output that is thereby made possible. But prospects for profit are fraught, too, with uncertainty, so although some amount of investment is taking place in the industrialized economy rather continuously, the amount of investment varies from one year to the next as producing firms seek to seize upon the opportunities of the moment, or alternatively lie back, waiting for better days.

Government's demand for goods and services produced by the private economy depends upon legislated appropriations. Most of

the programs set in motion by government are relatively permanent in character. That is, laws creating programs also provide for their financing in such a way that future revenues are automatically assured with no further legislative action. Some programs, however, require specific annual appropriations legislation and are subject to short-run expansion or contraction by this means. As we will see, the federal government will deliberately increase its demand for goods and services with the primary objective of changing the aggregate level of demand for output of the economy in order to beneficially affect employment of labor or prices of output. Thus, it might be said that government is at least partially counteracting or compensating from moment to moment for the level of consumer and investment demand, and changes in the level of such demand as well as changing supply conditions.

Whatever is produced in satisfaction of demand has a cost attached to its output. A producing firm wears away its invested capital and pays out wages to labor, dividends to its owners, interest on borrowed money and rent on land. It also compensates its management and recognizes the cost of wear and tear on its plant and equipment. If all goes well for it, there will be something left over from its revenues that it retains for itself.

At any one time, a firm produces with a relatively fixed productive base; that is, its plant and equipment is what it is and it cannot be readily expanded. Thus, output in the short run is expanded by increasing the use of variable labor and material in combination with the fixed productive facilities. Naturally, as

output is expanded under such circumstances, sooner or later increasing marginal cost sets in, and the average cost to produce rises. Depending upon the scale and characteristics of in-place plant and equipment, marginal cost to produce may rise rapidly with increased output, or slowly, but rise it must. Accordingly, the short-run supply curve of the economy is a rising one. For given conditions, then, the price and level of output is determined by demand for output and the cost to produce it. If demand for output shifts outward, or if the cost of variable factors to produce rises, the price level will rise. On the other hand, in an industrial economy, if demand for output falls, as we will see, prices will not fall, but because of an inherent inflexibility of wages will stay where they are.

It is easy to see that under these circumstances all that is produced may not be absorbed by demand, and producing firms may be forced to make unintended investment in their own finished inventory. Alternatively, at any moment, demand may outstrip output and by its outward shift cause prices to rise. Accordingly, the value of output is subject to change by virtue of the shift, one way or the other, in demand. A decrease in demand without a simultaneous decrease in output with prices remaining where they are will still result in less being paid for the output than its cost to produce it because only part of it will be absorbed. Producing firms under such circumstances find it difficult to avoid being trapped between the cost to produce and the amount of output they can sell.

A producing firm at some given point in time will generally have an investment in fixed facilities and inventories made in earlier times the cost of which it will only partially have recovered. Each production period, in-place capital depreciates and if the firm is to stay in business, its revenues must cover the amount of depreciation. Otherwise, the firm will be unable to replace the means with which it produces output. In our history, there has been a legion of firms, large and small, that have fallen by the wayside because they were unable to recover the investment in capital originally made to start operations.

Few producing firms can finance their operations completely from ownership funds and as a matter of fact, the nature of industrial activity and trade dictates the use of at least some short-term debt. But it is also common for firms to rely on long-term debt to finance in part their on-going operations. Interest on debt must be paid and the debt principal itself must either be repaid or reborrowed; a firm's revenues must be sufficient to meet those obligations if it is to avoid being taken over by its creditors. Thus, it must sell enough to cover its fixed expenses.

Labor is a variable cost of producing output and consequently should demand for a firm's products fall, in cutting back output in response to the decline in demand, it can reduce labor costs. The cost of labor is thus one that can be avoided by the entrepreneurial firm in times of depressed demand. It might be thought that a profit must not necessarily be realized, but any persistent dampening of the rate of return on invested capital is



bound to pose problems for the firm in attracting additional or replacement capital. Under such conditions, creditors' and prospective additional owners' demands for a return on their commitments, if met, can come only at the expense of existing owners.

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## MAKEUP OF GROSS NATIONAL PRODUCT

1. Value Added

It might be inferred from what has been written about product value that the value of all that is produced in an economy in any one year is simply the sum of the revenues of all producing firms and the revenues of individuals selling their services. But all sales of goods and services that take place are not final. Many sales are between producing firms. As such, those sales are intermediate in nature and reflect the output of some producers that represents the supply of materials for others. That is, everything that changes hands does not reflect an expenditure for consumption or investment, nor the expenditures that government makes for goods and services. Rather, many sales represent the transformation of resources in a complicated chain of development as materials and services move from the inception of the productive services that characterize the industrial economy to final form as goods and services absorbed by consumers, capital that is absorbed by producing firms, or those goods and services government buys for its purposes.

Gross National Product has been earlier defined as the value of all final goods and services produced by an economy in any year. In order to avoid the exaggeration in its value that otherwise might take place by totaling up all exchanges of goods and services among producers, only the value added by each producing firm or individual is counted in arriving at the value of GNP.

That value added is primarily in terms of the value of labor and capital that each producing entity adds to the value of a product eventually offered for sale as a final good or service.

Thus, in an illustration that is commonly used for this purpose, a farmer buys seed, fertilizer and capital, and pays rent on land to raise a crop. The farmer adds the value of his labor to the value of the other resources going into producing the crop and sells it to a middleman who adding the value of his services in turn sells it to a food processor. At this point, the food processor must add further labor and capital use as well as other resources he buys such as electrical energy in order to convert the crop into a processed food. So to the cost of all he purchases he adds the expended value of labor and capital, and the profit for his entrepreneurship in arriving at the price for which he sells his product to a merchandiser. When the consumer buys the processed food from the merchandiser, the latter will have added the value of his services to the value of what he bought from the middleman. In Table 4-1, we see that in the chain of events culminating in the final sale of output to the consumer, the value of that output is simply the sum of the values added by each entity having a hand in moving and transforming it into final form.

The same reasoning is applied to each of the products that make up the total of goods and services absorbed by consumption, investment and government demand. Whether the product is a

processed food, a physician's treatment of disease or the service rendered by a commercial bank, its value is the sum of all the values added, but no more, that result in its final sale.

TABLE 4-1  
Illustration of Value-Added Concept

Transformation Agent	Purchases	Value Added	Total Value
Farmer	\$ 30	\$ 10	\$ 40
Middleman	40	5	45
Food Processor	55	40	95
Merchandise	100	15	115

The final value of processed food is arrived at by adding to the purchases of \$30 by the farmer, the purchases by each agent in the transformation process. The food processor, for example, buys not only the crop valued at \$45 but utilities and other resources as well valued at \$10 and adds further value of \$40. Thus total or final value of the food is  $\$30 + \$10 + \$5 + \$70 = \$115$

## 2. Government Goods and Services

One might ask whether the expenditures by government for goods and services are treated in the same way, that is, whether the value-added concept applies to the activities that government goes through in providing public goods and services it has determined are required by the economy. It turns out that the value-added concept does indeed apply. Government, as we have seen, buys goods and services produced by the private economy, and its purchases are considered final in nature. The total of government

purchases, then, is not thought of as being those leading to further transformation into yet other goods and services. But, of course, we know that they are. Purchases are combined with the value added by government employees and are then offered to the economy as public goods or services in fulfillment of predetermined needs. Thus, a special treatment is accorded government for its part in the value of GNP. To the value of all final sales of goods and services, we simply add the wages and salaries government pays its own employees, and consider the amount of their wages and salaries as the value of their services. The value of GNP is the value of all final sales plus the wages and salaries paid by government to its employees.

The government, of course, is enabled to pay for its purchases and to pay its employees by the taxes it takes from the economy. For our purposes, at this time, we can think of those taxes as those the government imposes on sales and those it imposes on income. A common way of treating sales and excise taxes is to add them to the total value-added of final goods and services. Thus, final sales include sales and excise taxes as elements of value-added, so to speak. On the other hand, income taxes are not directly identified as part of value-added but are collected out of the measured value that firms and individuals contributed to total product value. Government activities, in this respect, can be represented as illustrated in Figure 4-1.

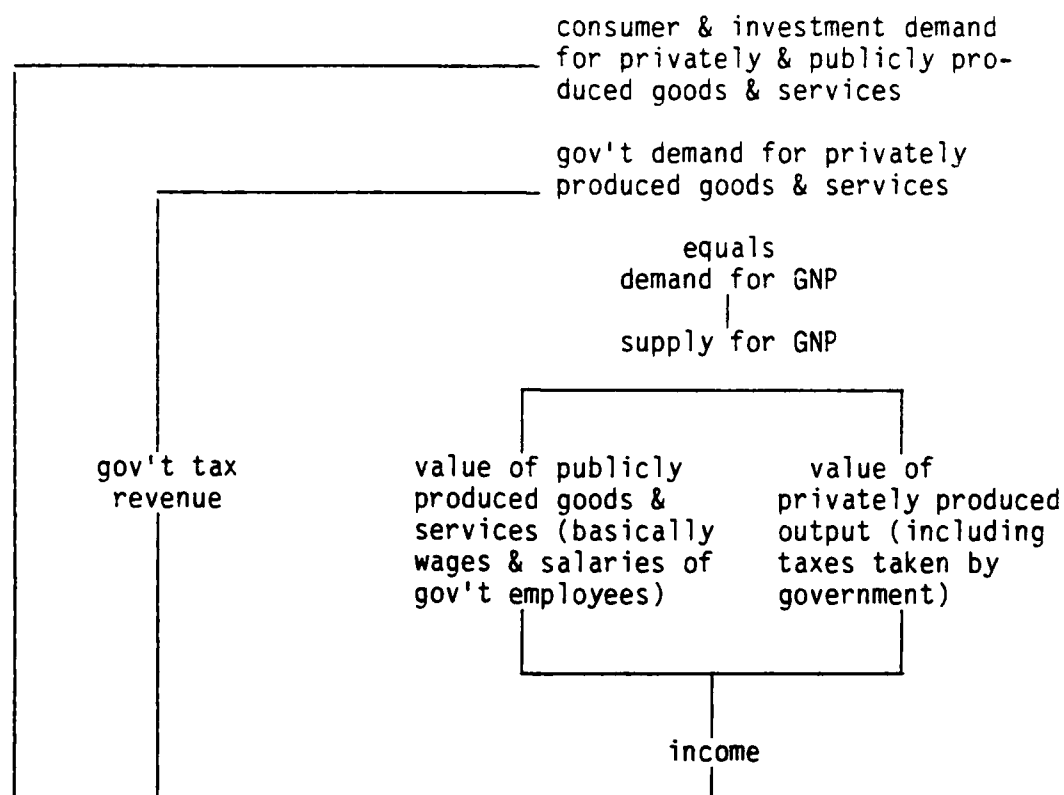


FIGURE 4-1. GNP and Value of Government Goods and Services

### 3. National Income Accounts

We are now in a position to delineate the value of GNP into its constituent elements or what are referred to as the national income accounts. The Census Bureau of the U.S. Department of Commerce has primary responsibility for collecting the statistics with which to determine the value of GNP. Given the value of GNP, we can subtract estimates of capital consumption or depreciation allowances and we have Net National Product or NNP. As we will explain shortly, depreciation allowances are not a precise measure of the physical wear and tear or obsolescence of plant and equipment but simply a convenient and useful estimate for them.

If excise taxes, custom duties and business property taxes commonly referred to as indirect business taxes are subtracted from NNP, National Income or NI is arrived at. National Income represents the sum of payments in any one year to individuals and producing entities for their roles in producing GNP.

If we subtract from NI, the taxes that corporations pay government besides indirect taxes, and further reduce the resultant figure by the profits they retain, we have the total of income payments that are made to individuals in the economy for their part, whatever it might be, in producing the output of economy. However, government also makes payments to individuals solely for the purpose of redistributing income. It should be understood that those payments are a transfer of income taken from the economy as a whole to selected groups of individuals meeting predetermined entitlement criteria. Those transfer payments plus all other individual income equal Personal Income, or PI. If from that figure we now subtract personal taxes and interest on consumer debt, we have Disposable Income, DI, a more important consideration for our purposes in this text.

Figure 4-2 shows how the elements of GNP, as delineated by the U.S. Department of Commerce, are typically illustrated in simplified block form.<sup>1</sup> All of the revenue realized by corporations, self-employed, individuals, proprietorships and government employees from government, consumption and investment

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<sup>1</sup>See, for example, R. A. Samuelson, Economics, New York: McGraw-Hill Book Co., 1980, 11th ed.

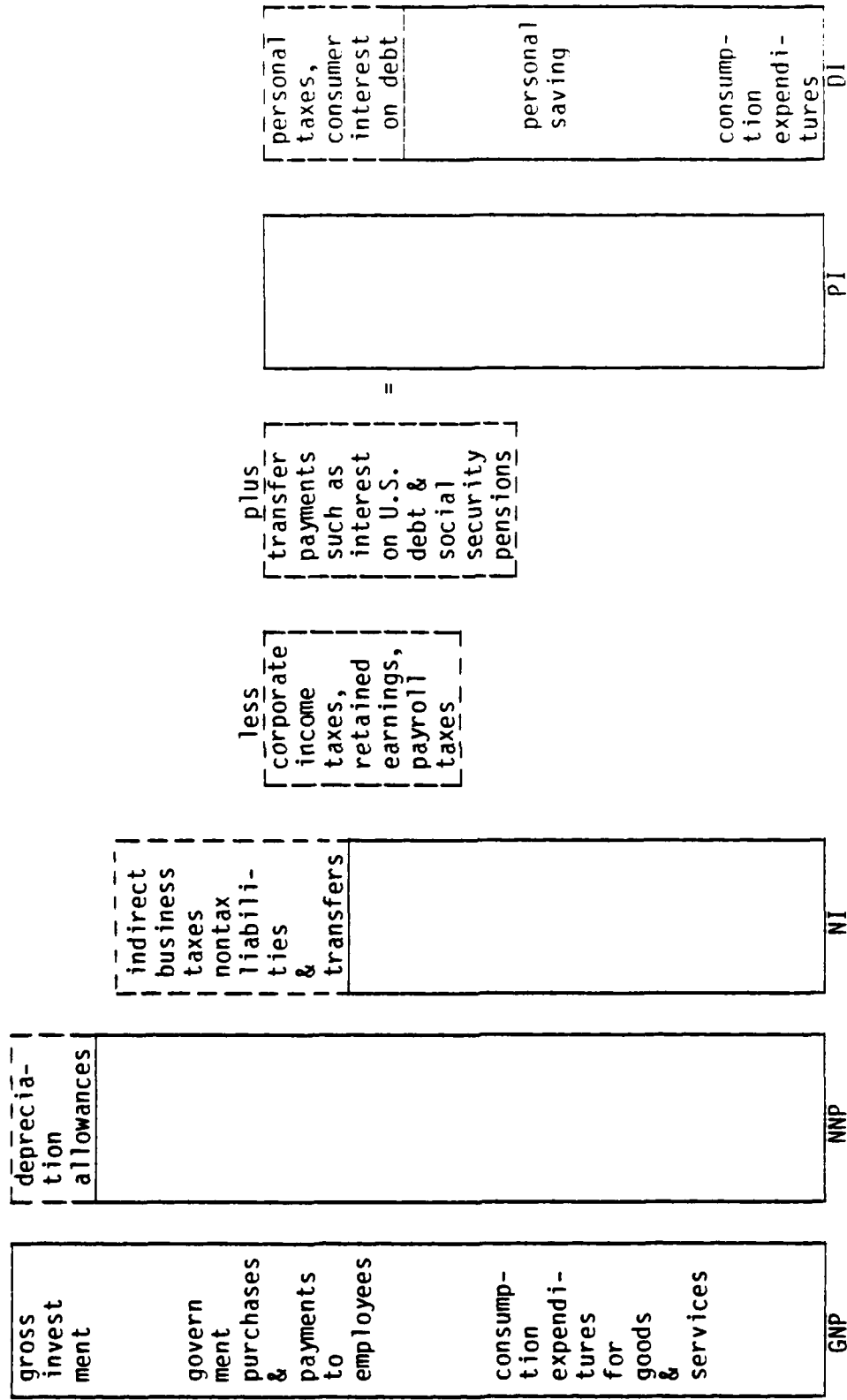


FIGURE 4-2. Elements in distribution of GNP.



expenditures is accounted for. However, it is worth our while to extend our analysis of GNP one step further and examine in some detail each of the elements that make up its distribution.

#### 4. The Inner Workings

As remarked earlier, depreciation allowances reflect the cost of plant and equipment and other facilities that go into producing output. In the U.S. national income accounts, they include an estimate of residential housing depreciation. For business and industry, depreciation allowances are a measure of both physical wear and tear and anticipated technical obsolescence that eventually overtakes all plant and equipment. Depreciation allowances are thus a means by which business and industry account for and recapture investment used up in the productive process.

Depreciation allowances are deductions from realized revenues and so provide for the retransformation of plant and equipment back into the money that originally made them possible. It is to be expected that the individual firm would want to replenish its productive plant with recaptured depreciation. However, the lumpiness of capital is such that it is not easily replaced on a continuous basis as can be a pool of water from which flows a stream at a measured rate. Thus, a firm will generally replace its physical assets at intermittent and sometimes widely separated intervals. For the larger firm which has expanded its plant and equipment over many years, its replacement of depreciating assets might take place relatively steadily, but for reasons that will

become apparent in later chapters, even those firms will also bunch up replacement from time to time. We will see that this bunching up can be a major destabilizing influence in the industrialized economy.

Indirect business taxes include sales and excise taxes, customs import duties and property taxes. Sales taxes and excises make up more than half of the total and are those taxes that are generally accounted for at the point of final sale of a product. In the U.S., sales and excise taxes are imposed by each of the three levels of government, but account for differing proportions of taxes collected by local, state and federal government. Sales and excise tax revenue is a more significant proportion of total revenue for localities and states than it is for the federal government. Sales and excise taxes are assessed as a percentage of sales revenue, and can be of a general nature as for example, state sales taxes which are imposed on practically all sales save consumer grocery sales and physicians fees and the like. Such taxes can also be selective as for example the federal tax on retail gasoline sales or interstate telephone service charges.

Property taxes are imposed on businesses in the U.S. by localities and states according to a variety of formulas which use assessed property valuation as the basis for taxation. Customs duties are imposed by the federal government on imports primarily according to sales value.

After depreciation, indirect taxes, nontax liabilities and transfers, business and industrial firms must meet all other costs

of operation, and in the event of a profit, pay income taxes to government. Nontax liabilities are fines and assessments of one sort and another. Business transfers take the form of gifts and grants to individuals and nonprofit organizations, and also include losses on bad debts. The major element of business costs is employee compensation and is made up of direct compensation in the form of wages, salaries and bonuses, together with a variety of fringe benefits. Wages, salaries and bonuses of all individuals, top corporate executives as well as production line workers are included in the total. Foremost among fringe benefits are private pension and medical cost payments made for employees. Since the end of World War II, fringe benefits in the U.S. have increased significantly as a proportion of total employee compensation. That is to say, that direct wage and salary payments constitute a lesser part of total compensation than they did in earlier times. But while that is so, they nevertheless have grown dramatically in real terms in the intervening years as we have already seen. We shall have more to say on the subject of real income changes in later chapters of the text.

Although the economy of the U.S. is dominated by the incorporated form of business and industrial organization, there are nevertheless many proprietary establishments. Corporations run the gamut from the very small, that is only two or three or a few more employees, to the very large with hundreds of thousands of employees. Surprising to some people, the corporate form of organization is used by dentists, physicians, consultants and many

others who offer specialized services. Proprietorships differ from incorporated establishments in that what proprietors have left over after all costs is treated as individual income as opposed to corporate profit. The latter is accorded different income tax treatment than is the compensation of individuals.

Corporations and proprietorships also pay interest on debt and rent on facilities leased from others. Owner capital is a basic requirement of any business; nevertheless, borrowed capital is an indispensable element of total capitalization of all but a few firms in the industrialized economy. Utilities and transportation firms rely heavily on long-term debt; other types of firms may not. They all, however, make use of short-term debt. For the total of borrowed money, interest must be paid. That interest is paid either directly to individuals or to other businesses. The net interest shown in Figure 4-3 is the excess of interest paid by business and industrial establishments over interest received from individuals. It can be readily understood that individuals as a group in saving some of their income may loan it to business and industry. At the same time, as consumers they buy from business and industry on credit and must pay interest for credit purchases.

Practically all businesses in the U.S. pay Social Security taxes; their employees as well as self-employed persons also pay Social Security taxes. Those taxes are paid as a percent of covered payroll or income. Although originally conceived as a plan into which individuals and their employers would contribute for the individuals' own future retirement, U.S. Social Security has become

what is referred to as a pay-as-you-go system in which taxes paid by employed and employers finance the pensions of those currently retired. Some of the Social Security taxes also finance unemployment compensation as well as disability retirement income.

Income taxes are imposed on corporations by the federal government, states and localities according to the profits that remain after all expenses have been met. After corporations pay annual income taxes, they pay dividends to their owners and save what is left. Their savings are referred to as retained earnings and form a very important part of the manner in which economic growth is financed and as shown in Table 4-2, vary significantly as a proportion of total saving in the U.S. economy.

TABLE 4-2  
Private Saving in the U.S. Economy 1960-1980  
(in billions of dollars)

	1960	1965	1975	1980
Personal saving	19.7	33.7	94.3	106.2
Corporate retained earnings	12.1	30.0	29.1	38.9
Total	29.8	63.7	123.4	145.1

Source: U.S. Statistical Abstract, 1982-83, p. 426

Since some corporations own other corporations, dividends as shown in Table 4-2 are those paid to individuals; the dividends that corporations might pay one another for share

ownership are accordingly excluded and are partially embedded along with whatever other revenues corporations eventually retain as savings.

Government, as we have seen, pays out money for purchases of goods and services. But government also pays out money to individuals in the absence of any exchange of goods and services. Such income payments are referred to as transfers. The name is apt since they are basically the transfer of taxes collected from the economy as a whole to qualifying individuals according to entitlement criteria. The best known transfer payments are those made by the U.S. Social Security system for ordinary retirement pensions. The money to pay those pensions comes from the payroll taxes imposed on employers and employees by the federal government. Some of the payroll taxes as mentioned earlier also finance unemployment compensation, yet another transfer. The federal government and states also make transfer payments to handicapped and indigent individuals according to various qualifying formulas, and finance those transfers from general tax revenues. These payments are made with the objective of achieving an improved overall social welfare by means of a redistribution of income. As can be seen in Table 4-3, they comprise a relatively small part of PI, but apparently are subject to substantial exaggeration in the minds of many of the U.S. electorate.

Another sizeable but not as well known transfer is the interest of the U.S. debt. Just like other transfers, it is made possible by a redistribution of income through the federal income

tax system and represents payments for borrowed money by those subject to federal income taxes to those holding U.S. Treasury securities representing the federal debt. In this respect, too, there tends to be a popular misconception of who holds the U.S. debt. In the eyes of many, the debt is held by the wealthy, but this is only partially true, for much of the debt, as we will see, is held by banks, insurance firms and pension funds and other nonbank intermediaries. A substantial portion of it is also held by U.S. Social Security which it is required to buy with collected payroll taxes and which it must hold as a contingency against falling payroll taxes and rising benefit payments that may occur from time to time. Other federal trust funds are also required by law to invest their revenues in federal debt. Thus, it can be seen that the income transfer occasioned by income taxes and interest payments is not as regressive and significant as it might first appear to be.

In considering government transfers, one should understand that they directly add or subtract nothing from the total realized income of an economy, but are simply a device for redistributing that income which the production of output has generated. Now, it is entirely possible that in the absence of transfer payments made by government, National Income would be other than what it is, and as we will see in a later chapter, this is a subject of heated debate among individuals of divergent political philosophies. But given NI, transfer payments neither add nor subtract from it. Are wage and salary payments to government employees transfers? Definitely not. Government pays wages and salaries to its

employees in exchange for valuable services. The value of those services is incorporated in the value of public goods and services that government provides for the economy. Wages and salaries of government employees are incorporated in Figure 4-2 as part of total employee compensation. The expenditure of government for wages and salaries is considered part of government purchases of goods and services.

TABLE 4-3  
Gross National Product and National  
Income Accounts, 1980  
(in billions of dollars)

Component		Amount
Gross National Product		2633.1
less depreciation of allowances	293.2	
Net National Product		2339.9
less indirect business taxes	207.5	
National Income		2117.1
less corporate retained earnings	96.9	
corporate income taxes	84.7	
Social Security payroll taxes	204.0	
net interest	187.7	
plus government transfers		285.8
consumer interest		263.4
corporate dividends		55.9
business transfers		11.4
Personal Income		2160.4
less personal taxes	336.3	
Disposable Income		1824.1
less saving	106.2	
Consumption Expenditures		1717.9

Source: U.S. Statistical Abstract, 1982-83, pp. 420, 423

The Personal Income that individuals realize is not completely at their disposal. Out of PI must be paid income taxes,



and taxes on property and wealth of various sorts. Besides the taxes that are taken from PI, consumers must also make interest payments on accumulated debt. Table 4-3 shows that interest on consumer debt is a significant part of PI. While being significant, it is also variable and is subject to change according to the availability of credit to consumers and their inclinations to add or subtract to that they already owe. In times of rising output and employment, consumers tend to take on more debt, but as output and employment reach capacity limitations, credit conditions become stringent; in times of falling output and employment, consumers avoid new debt and try to reduce that which they have incurred, and concurrently credit conditions tend to ease.

Individuals divide Disposable Income between personal saving and consumption expenditures. Out of total DI, personal saving generally runs between 5 to 7 percent, but out of total saving at any one time a relatively few individuals save a much larger percentage of their income, while simultaneously a great number of individuals save hardly anything or nothing at all or even dissave. Somewhere in between those two extremes, individuals manage to set aside a small part of DI as personal saving. The forms that personal saving take are varied, but generally include any setting aside of a part of DI in some sort of interest bearing asset. Thus, personal saving is more than personal saving accounts at banks or savings and loan associations, but includes as well increases in cash values of life insurance policies, and employee contributions to private pension funds as well as direct invest-

ments that individuals make in new corporate debt and ownership and new government debt. Personal saving is an extremely important part of the distribution of income in any economy. As we will see, together with corporate saving it must be made available for investment out of realized income primarily through nonbank financial intermediaries.

#### 5. Demand for Gross National Product

Distributed income that is generated by the production of goods and services forms the basis for demand of those very same goods and services. We saw in Chapter 3 that demand for output is reflected in the expenditures by consumers, producing firms and government. Consumers finance their expenditures with realized income or a combination of income and credit. Producing firms finance their investment expenditures out of retained earnings and borrowed money, and government pays for its expended demand for goods and services with tax revenue and borrowed money as well. The fact that all three constituents in the demand for goods and services rely on borrowed money for some of their expenditures suggests the existence of a financial intermediation system. As we will see in later chapters, such a system indeed exists in any advanced economy and is a crucial and indispensable element in the exchange of goods and services. There is yet a fourth element of demand. National economies trade with one another, and any one country that buys goods and services from the rest of the world pays for them with goods and services of its own. The difference

between what a country exports to the rest of the world and what it imports is referred to as net exports. Table 4-4 shows the four components of aggregate demand for the U.S.A. in 1980. As can be observed, consumption expenditures constitute by far the largest component of demand. Durable goods, which in 1980 accounted for \$214 billion of demand, are generally those consumer goods which last at least a year while nondurable goods are those consumed within a year.

TABLE 4-4  
Gross National Product & Categories  
of Demand, 1980  
(in billions of dollars)

Gross National Product		2633.1
Personal consumption expenditures	1667.2	
<i>durable goods</i>	214	
nondurable goods	670	
services	783	
Gross private domestic investment	402.3	
fixed business investment	309	
residential	103	
change in business inventories	-10	
Government purchases of goods & services	538.4	
federal		
state & local	191.6	
Net exports of goods & services	25.2	

Source: U.S. Statistical Abstract, 1982-83, pp. 418, 419.

Automobiles and major appliances are examples of durable consumer goods while food is a nondurable good. Consumer services include entertainment, medical care and personal grooming. Gross private domestic investment expenditures in 1980 totaled \$402.3 billion. As earlier shown in Table 3-3 and as can be seen in

Table 4-4, those expenditures are made up of investment in plant, machinery and equipment by business and industry, residential construction and changes in business inventories. Fixed business investment includes capital consumption allowances which represent estimates of depreciation and depletion of accumulated capital. Residential construction while certainly a good that will be eventually consumed by households is treated as part of gross investment in that it is of a capital nature. Business and industry each year add to or take down their inventories. In 1980, inventory decreases amounted to \$10 billion. Generally, some changes will take place in any one year because of miscalculations by business and industry as to demand or because producing firms deliberately plan those changes. Inventory changes are changes in investment whether they are planned or not. Government purchases of goods and services are comprised of state and local, and federal demand, with the former being significantly greater than the latter. In 1980, the U.S. exported \$25.2 billion more goods and services than it imported. It is not always so. Foreign trade and the system of payments which underlie it make up a later chapter in this text and are dealt with at some length therein.

## 6. Observations

A great economist once remarked that consumption is the end of all production. If this is true, consumer expenditures for goods and services must play the central role in economic activity. That is, what consumers spend for goods and services is determined to a great extent by the investment in productive facilities that an

industrialized economy makes. As demand for final goods and services of a personal nature fluctuates so does investment in the whole chain of plant and equipment that goes into producing that output. Consumers signal their preferences in the marketplace and surveyors of goods and services respond. Their response sets into motion a sequence of events that has a profound impact on an economy. Consumer preferences in the marketplace coupled with their expressed preferences in the voting booth also determine the expenditures that government makes to provide public goods and services.

Doubtlessly, as some observe, consumers are measureably influenced by advertising, and so producing firms can sway demand in favor of the products they already have decided upon, but in the final analysis, if experience tells the consumer that total utility has not been maximized by earlier expenditures, changes will take place in spending patterns. Of course, where investment is being made out of realized income, per-capita real income over the long term is bound to grow, and as it does, room in the consumer's market basket is made for not only more of existing products, but for entirely new products as well; this may well be the essence of the industrialized economy.

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## INDEX NUMBERS

1. Value of Output

In any one year, the current value of output that an economy produces will very likely differ from the current value of output of some other year. One reason for this, of course, is the differing composition of output in the two years. The difference in the makeup of output is partially the result of changes in lifestyles brought on by technological advance; the difference is also partially due to the short-run undulations that every industrialized economy goes through. Even in the absence of technology changes, there very well might be differences in output precipitated by changing conditions of supply and consumers' preferences for a static array of goods and services. Thus, what might be relatively desirable and producible at one point in time may have a different degree of desirability and producibility at some other point in time.

Concurrently with any change in the composition of output there will very likely be changes in the prices of the products involved as well. With given technology, if there is an increase in the demand for any one product, its prices can be expected to rise, at least temporarily. We know, however, from price theory that an upward shift in demand coupled with rising prices should result in expanded supply as rising profits attract new firms to

the industry offering the product. Thus, the price of the product under such conditions will rise at first, then might be expected to settle down perhaps to where it was before, perhaps not.

Naturally, when a shift in demand with given production technology takes place in one industry, the demand for output in all other industries is affected. With given income, an increase in demand by consumers for one product means a decrease in demand for some other product or products. Under perfectly competitive conditions, a downward shift in demand for product, supply conditions remaining as they are, would result in a falling price and output. However, in the industrialized economy, most output is produced by large firms which instead of responding to falling demand by reducing prices generally hold the line and maintain prices where they are. At the same time, the increased productive capability with given technology for the product in which an upward shift in demand has taken place is no guarantee that a price reduction will occur there.

Those of us who live in the industrialized world are also well aware that from time to time aggregate demand for output will fall back sharply or surge forward as an economy goes through the undulations of the business cycle. Individuals sometimes are thrown out of work, and the total labor force with less disposable real income buys less; alternatively, employment increases, total disposable real income rises, and demand for output shifts upward. Real income is a measure of the quantity of goods and services that consumers can demand. It is, too, a reflection of the part that



consumers as members of the labor force have played in production. We live by what we produce. This suggests that in times of falling aggregate demand, money prices and money income could unseemingly be rising, and mask the actual deterioration in real income and output. At other times, in the face of rising output and a consequent rise in real income and demand, prices could remain relatively stable, and the total current value of output would indeed be a measure of real output gain when compared with an earlier value.

As real income of consumers moves up and down in the short run, the composition of output is affected. Producing firms respond to changes in consumer demand as individuals adjust their preferences for output. To the individual, what appeared to be relatively important in terms of utility yesterday may be more or less so today in the face of a change in real income. Accordingly, out of an increased or diminished total output, prices and quantities of products both will affect its currently stated value, and we cannot readily tell from that figure what actually has taken place.

Technology advances, too, work their own influence on the value and composition of output. Changes in consumer demand and technology advances are intertwined. New consumer products appear on the market scene and are produced with existing technology; and within existing product lines, changes in style and design are readily accommodated with current productive capability. But technology advances make possible entirely new products along with making possible greater output of existing products. Entrepreneurs

seize upon new technology to satisfy as yet unarticulated but nevertheless potential demand. Thus, the automobile replaced the horse drawn carriage and simultaneously increased travel; the telephone replaced much letter writing and simultaneously increased communication; and the hand calculator is replacing handwritten mathematical calculations reducing gnashing of teeth, and simultaneously making greater analysis possible.

As new products make their way into the consumer's market basket, the composition of an economy's total output is undergoing continual change and the relative prices of continued market basket items are also changing. Thus, today, the price of private transportation relative to clothing and medical care may differ from yesterday's relative prices and be yet different from tomorrow's. Accordingly, technology affects the total amount of output and the proportion that each product accounts for in total output; causes products to disappear and others to appear; and finally brings about changes in relative prices.

At the same time, the amount of money that the economy has to use in the exchange of goods and services is generally changing, but not necessarily in conformance with the rate of change of output itself. In times past, occasionally there occurred drastic reductions in the amount of money in circulation, bringing about a resultant collapse in the overall price level. These price deflations were coupled with falling output. At other times, falling prices were associated with rising output. More recently, since the worldwide depression of the 1930's, the amount of money in

circulation in the industrialized economies of the world has tended to increase relative to output from year to year. That steady increase in money has been linked to a similar rise in the general price level. But in the face of the rise in money and prices, there has not been a wholly parallel rise in output. To be sure the secular change in output has been upward, but as remarked earlier, over the short term, output has had its ups and downs. Because of population growth, not very often has total output in the U.S. fallen from one year to the next, but output per capita has undergone significant downturns as in the recessions of 1950, 1958, 1960, 1970, 1974, and 1982.

What we have said so far about prices and output suggests that an improved understanding of output value can be achieved by decomposing the activity of an industrialized economy into its numerous constituents. It is readily understandable that changes in consumer demand and the intertwining advances of technology have an impact on all activity in the economy. Consumer demand changes and technology advances directly affect investment in productive plant and equipment, and accordingly have an impact on prices and output of what can be called producer goods or capital goods industries. Therefore, it would be very misleading to use some measure of changes in consumer goods and services industries to represent all the changes in an economy that are concurrently taking place. In this respect, J. M. Keynes and Irving Fisher many years ago did pioneering work in the theory of index numbers and their use in explaining interperiod changes in an economy, and we rely on their development for our purposes here.

## 2. Construction and Use of Index Numbers

A comparison of economic activity in one year with that of another can be facilitated by the use of index numbers. An index number is a measure of the relative change in some one variable or variables usually between two different places or points of time. But all that has been said so far in this chapter would lead one to believe that the comparison of output and income in one year with that of another is not easily made and that any method of indexing would have its limitations. Nevertheless, index numbers are widely used in economies, and imperfect though they may be, they are the most practical means of measuring changes that take place in the values of economic variables.

Index numbers are usually ratios and most often averages of a number of variable value changes. Thus, unless an index number refers to the relative change in one variable alone, it measures the net relative change that has taken place among variables under consideration. Most often, in economic activity, the individual encounters index numbers relating variable changes between two different points in time, with values in one point in time serving as the base against which values in some other items are compared. In time, an index is rendered obsolete, because of the changes discussed earlier. Accordingly, it is to be expected that economic indexes would be updated at periodic intervals. An example is the Consumer Price Index published by the Bureau of

Labor Statistics in the U.S. Department of Labor.<sup>1</sup> The base year and the variables in the index are generally revised about every ten years.

It is easy to understand that if the variables being measured each comprise a different proportion of their total, some system of weighting is necessary if the index number is to make any sense at all. Using a typical method found in textbooks to illustrate the concept of weighting, we list below three items, salt, bread and meat, with their hypothetical prices and quantities for the years 1978 and 1979.

<u>Item</u>	<u>1978</u>			<u>1979</u>		
	<u>price</u>	<u>quantity</u>	<u>value</u>	<u>price</u>	<u>quantity</u>	<u>value</u>
salt	.05	100	5.00	.10	110	11.00
bread	.20	200	40.00	.30	225	67.50
meat	.75	300	240.00	.975	310	302.25
			<u>285.00</u>			<u>380.75</u>

To make a comparison in price changes between the two years, we could simply calculate the change in price for each item between 1978 and 1979 and divide by 3. Thus,

price change in salt	100%
price change in bread	50%
price change in meat	30%
	<u>180%</u>

180    3 = 60% price change

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<sup>1</sup>See U.S. Dept of Labor, BLS Handbook of Methods for Surveys & Studies, Bulletin 1458, 19; The CPI History & Techniques, Bulletin 1517, 19; & The Consumer Price Index: Concepts and Content Over the Years, Report No. 517, 1978, Washington DC, Gov't Printing Office.

To express the change in the form of an index, we set up the ratio of 1979 prices as a percent of 1978 prices over 100.

Thus,

$$P = \frac{160}{100} = 1.60$$

Thus, we have calculated an average change in prices of 60 percent. But we observe that the greatest jump in price was in salt where there was a 100 percent increase, and the least price increase was in meat. At the same time, we observe that total expenditures in meat were far greater than total expenditures in salt, so the average rise in price that we have calculated is not very representative of the increase in total expenditures occasioned by price changes alone.

A seemingly more appropriate way to reflect the impact of the three price changes would appear to be to weight each good's price according to the quantity of the good accounted for in the earlier year selected as the base year. Accordingly, with notation ascribable to Tuttle, the formula for doing so would be

$$P_{01} = \frac{\sum p_1 q_0}{\sum p_0 q_0}$$

Applying for formula with 1978 as the base year, or year 0, and 1979 as year 1, we have

$$P_{01} = \frac{.10(100) + .30(200) + .975(300)}{.05(100) + .20(200) + .75(300)} = \frac{362.5}{270} = 1.343$$

We see that  $P_{01}$  is a more realistic reflection of the impact that the three price changes would have had on total expenditures, given

the quantities in the base year, 1978. Instead of an index change of 60 percent, it turns out to be only 34 percent, reflecting the much greater proportion that meat accounted for in 1978 at 1978 prices and at 1979 prices. While this is a distinct improvement over the simple average of price changes, it still does not reflect the change in quantities that took place in the interval. All  $P_{01}$  tells us is that if the same quantities of salt, bread and meat had been purchased by a consumer in 1979, as were purchased in 1978, they would have cost 34 percent more.

We can make a somewhat different comparison between the two years by weighting the units of output in each year by prices in one year selected as a base, and dividing the value calculated in the one year by the value calculated in the base year. Thus, we have a quantity index as

$$Q_{01} = \frac{\sum P_0 Q_1}{\sum P_0 Q_0}$$

Accordingly, again using 1978 as the base year, we calculate

$$Q_{01} = \frac{.05(110) + .20(225) + .75(310)}{.05(100) + .20(200) + .75(320)} = \frac{283}{285} = .993,$$

and express the weighted change in quantities that took place between 1978 and 1979. The index we have calculated does not reflect the change in prices that took place in the one year interval. All  $Q_{01}$  tells us is that if prices had remained the same for salt, bread and meat between 1978 and 1979, the value of their total output in 1979 would have been 99.3% of that produced in 1978, given that the quantities of salt and bread rose while that of meat fell.

The two indexes which we have used to reflect changes in prices and quantities are based on a common formula named after R. E. Laspeyres, the individual who first proposed its use in 1864. We emphasize that in the Laspeyres index the earlier year in any comparison is always taken as the base year. Alternatively, the indexes could be calculated with the later year taken as the base year. When an index is weighted with current quantities or prices, it is referred to as a Paasche index named after F. Paasche, who first proposed the formula in 1874. Thus,

$$P_{01} = \frac{\sum P_1 Q_1}{\sum P_0 Q_1}$$

$$Q_{01} = \frac{\sum P_1 Q_1}{\sum P_1 Q_0}$$

Shortly, we will make some observations on the relative advantages of the two in practical use.

The Laspeyres price index can be used to compare output values in two different years by deflating or conceivably inflating the current value of output in the later year. From our example, we divide the current value of 1979 output by the price index earlier calculated. Thus,

$$\frac{\$380.75}{1.34} = \$284.14$$

The figure so arrived at tells us that the real output value of salt, bread and meat in 1979 relative to 1978 was \$284.14. This figure differs from that which we calculated by multiplying 1979 quantities by 1978 prices, that is \$283. Why is there a difference



between the two? A difference exists because in the former calculation, both 1979 prices and output values are used to calculate current output value and that value is then divided by the price index which is weighted by 1978 quantities, while the latter calculation involves 1979 quantities weighted by 1978 prices only. That is,

$$\frac{\frac{\sum p_1 q_1}{\sum p_1 q_0}}{\sum p_0 q_0} \neq \sum p_0 q_1$$

The Laspeyres index maintains a constant base in the comparisons of prices or outputs of one year with those of successively later years so that the calculations involved are somewhat less laborious than those related to the Paasche index. However, the greater the interval of time to which the Laspeyres index refers, the less realistic is the comparison being made. The Paasche index, employing current year values as the base has a more up-to-date flavor, but nevertheless also tends to become increasingly unrealistic as the interval of time in comparisons increases. The index values calculated by either method need not be strikingly different. In our example, the Laspeyres price index is

$$P_{01} = 1.34$$

Calculating the Paasche price index we have

$$P_{01} = \frac{\sum p_1 q_1}{\sum p_0 q_1} = \frac{.10(110) + .30(225) + .975(310)}{.05(110) + .20(225) + .75(310)} = 1.345$$

We see that there is a very slight difference between the two, because there is very little difference in the proportions of salt, bread and meat in the two years. Those proportions are, of course, the weights by which prices are multiplied.

The Laspeyres index, with a constant base, offers an advantage over Paasche of shifting the base forward. Following the method of illustration by Keynes, Fisher and others, we can consider successive periods in time, say 0, 1, 2, 3, for which price indexes have been computed and weighted by quantities in period 0.

$$P_{01} = \frac{\sum p_1 q_0}{\sum p_0 q_0}$$

$$P_{02} = \frac{P_{02}}{P_{01}} = \frac{\sum p_2 q_0}{\sum p_1 q_0} \quad \text{or} \quad P_{02} = P_{12} P_{01}$$

$$P_{03} = \frac{\sum p_3 q_0}{\sum p_0 q_0}$$

$$P_{23} = \frac{P_{03}}{P_{02}} = \frac{\sum p_3 q_0}{\sum p_2 q_0} \quad \text{or} \quad P_{03} = P_{23} P_{02}$$

or for that matter

$$P_{30} = \frac{P_{00}}{P_{03}}$$

$$P_{31} = \frac{P_{01}}{P_{03}}$$

$$P_{32} = \frac{P_{02}}{P_{03}}$$

Thus, the indexes for any period can be expressed in terms of the prices in any other period, so long as the base weights remain unchanged.

To illustrate these relationships, we modify our example by adding prices and quantities for 1980.

Item	price	1978		price	1979		price	1980	
		qty	value		qty	value		qty	value
salt	.05	100	5.00	.10	110	11.00	.15	110	16.50
bread	.20	200	40.00	.30	225	67.50	.45	230	103.50
meat	.75	320	240.00	.975	310	302.25	1.30	325	422.50

The price indexes for each of the 3 years with 1978 quantities as the base are:

$$P_{1978} = 100$$

$$P_{1978-1979} = 134$$

$$P_{1978-1980} = 183$$

To express 1978 and 1979 prices in terms of 1980 prices, we divide the former prices by the later.

$$P_{1980-1978} = \frac{100}{183} (100) = 55$$

$$P_{1980-1979} = \frac{134}{183} (100) = 73$$

The indexes for 1978 and 1980 relative to 1979 prices are

$$P_{1979-1980} = \frac{100}{134} (100) = 75$$

$$P_{1979-1980} = \frac{183}{134} (100) = 137$$

We see that so long as the quantities used as weights remain fixed, we can express one index in terms of any other for whatever purpose we may have. But we also observe that the indexes are only a partial reflection of what has taken place because of

the changes in actual quantities in the three years. At the same time, our example is an oversimplification and masks the equally important shortcoming of indexes to which we referred earlier. That is the continuing change in the products that make up current output year to year. Certain products as we know remain in production year after year, but even they undergo change in quality, composition and style. The substitution of one product or factor for another in the face of relative price changes that are made by consumers and producing firms alike also affects the efficacy of indexes. So the comparisons that are made by use of indexes describe only partially the actual conditions that exist in the years under consideration.

We can partially overcome that deficiency by revising the base weights as frequently as is practical. Revisions in base weights, however, make comparisons of indexes based on one set of weights with indexes based on another set of weights rather tenuous. Nevertheless, indexes with partially distinct bases can be linked together to provide some means of comparability. From our earlier discussion of the way in which Laspeyres indexes relate to one another, we restate the following

$$P_{02} = P_{12}P_{01}$$

$$P_{03} = P_{23}P_{02}$$

from which

$$P_{03} = P_{01}P_{12}P_{23}$$

If the base weights were now to be changed from those in period 0 to period 1, the correspondence between period 0 and period 2 would be partially destroyed and the index  $P_{03}$  would involve two different sets of weights. Yet the product of successive indexes involving different bases is one of the few practical means of relating what is taking place in the present with what took place in the past.

### 3. U.S. Government Statistical Agencies

Ultimately, any central government must have access to current and precise statistics if it is to plan economic policy intelligently and if it is to implement policy effectively. Without data, without information on what is taking place in its economy, it can only haphazardly seek to move in the direction of its objectives, and really has no way of confirming that its implemented policy is in fact resulting in progress towards stated goals. Whatever its political nature might be, it must analyze the characteristics of the economy over which it has sway, and the way in which those characteristics have changed in the past and how they are predicted to change in order that it can design the programs that affect those characteristics suitably for its purposes.

Design is only the beginning, however; programs must be authorized either legislatively or by fiat and the appropriations from revenue must be made available before they can be implemented. Once it implements a program, central government must have some way to evaluate its effectiveness. In the United States, our federal government in furtherance of its distributional, allocational and

stabilization goals operates a vast and intricate network of activities primarily devoted to the task of data collection and assessment, and regulation.

Certain federal agencies have as their primary responsibility the gathering of statistical data for general use. Each of these agencies has responsibility for the routine and at times extraordinary collection, analysis and dissemination to operating agencies and departments at all levels of government and the public at large of data in their areas of responsibility. While this chapter emphasizes the subject of indexes and in particular price and quantity indexes, for the larger purposes of the text, other indicators representing the characteristics of the industrialized economy are of perhaps equal importance to us. In order to relate with some efficacy the theory of macroeconomics and public policy to actualities, we need some understanding of the way in which data responsibilities are carried out.

Perhaps best known of the federal government agencies responsible for collection of general purpose statistics is the Bureau of the Census in the U.S. Department of Commerce. As its name implies, it is responsible for taking censuses but this involves more than just population. Those that are mandated by the U.S. Constitution and federal statutes are:

- population, every 10 years
- housing, every 10 years
- agriculture, every 5 years
- trade, every 5 years
- manufactures, every 5 years

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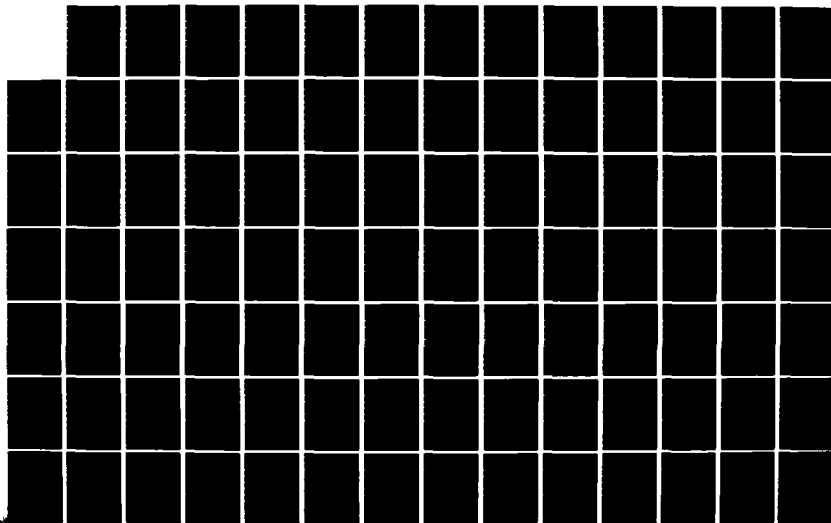
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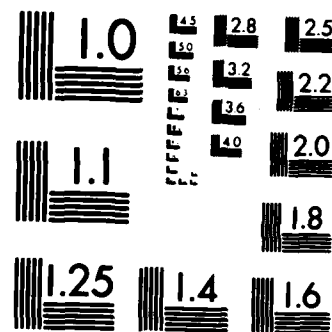
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NATIONAL BUREAU OF STANDARDS-1963-A



mineral industries, every 5 years

transportation, every 5 years

state and local government, every 5 years

The Bureau of Census is also responsible for conducting surveys between censuses as well as surveys in other areas for other federal agencies. Besides its censuses, perhaps its best known publication is the annual Statistical Abstract of the United States containing statistics on national demographic, cultural and economic characteristics.

The Bureau of Labor Statistics in the U.S. Department of Labor is charged with collecting and disseminating statistics which in one way or another reflect economic variables of importance to the U.S. labor force. The statistics for which it is responsible include those on wages, productivity, employment and unemployment, hours of work, and somewhat surprisingly, on prices and standards of living. Somewhat in contrast to the Bureau of the Census, the BLS carries out its main mission primarily by relying on sample surveys to estimate the statistics of labor variables. The BLS publishes current statistical series and summaries of major surveys in the Monthly Labor Review. Two of the most watched for figures are the Consumer Price Index and the Producer Prices Index.

The Statistical Reporting Service in the U.S. Department of Agriculture is responsible for the gathering and dissemination of agricultural statistics which include estimates on production and crop acreage, prices received and paid by farmers, farm employment and wages, livestock inventories and production as well as estimates of the number of farms. As might be anticipated, much

of the survey work is of interest and usefulness not only to other government agencies but directly to farmers and institutions comprising agricultural industries.

The Division of Research and Statistics of the Board of Governors of the Federal Reserve System is responsible for gathering and disseminating statistics on money, credit, banking and other financial and monetary activities. Its most widely known statistical services is its Index of Industrial Production which appears in the monthly Federal Reserve Bulletin. In that publication can be found statistics on the ownership of federal government debt, on commercial bank activities, on consumer credit as well as savings, and analyses of monetary activities of general interest.

Two other statistical agencies which gather data of importance in economic affairs are the National Center for Health Statistics and the National Center for Education Statistics in the U.S. Department of Health, Education and Welfare. The former agency collects and disseminates vital statistics while the latter is responsible for collecting and publishing data on education.

Statistics once gathered and disseminated must be acted upon. The Council of Economic Advisors within the Executive Office of the President makes use of statistics provided for it by data gathering agencies. It has as its primary responsibility, the analyzing of economic activity represented by the statistics and in cooperation with other Executive Branch departments and independent agencies formulating for the President the economic policy which becomes the basis for annual federal program proposals. Those proposals are designed to achieve the broad objectives related to

income distribution, resource allocation, and stable economic growth. Thus, the Council must deal with the parochial interest of each department and agency and synthesize them into a workable economic policy.

Each of the departments and independent agencies, of course, also makes use of statistics available and of interest to it in originally formulating program proposals within its own narrow field of interest. Each activity conducts its own analysis of data or relies on the research of others. One such research agency is the Bureau of Economic Analysis in the U.S. Department of Commerce which analyzes the transactions of the U.S. economy with foreign countries, national industrial and business activity and regional economic trends. It also indulges in forecasts of economic activity. Its valued publications are the monthly Survey of Current Business, Business Conditions Digest and Defense Indicators. Less frequently it publishes Long Term Economic Growth.

The U.S. Social Security Administration and the U.S. Internal Revenue Service are two other federal agencies, that in the routine course of their operations gather and analyze statistics which are invaluable to a number of other federal activities and state and local government agencies. The statistics of the SSA and IRS focus on employment, earnings, taxable wages, health insurance costs, retirement income, corporate revenues and profits, personal income and estates, and small business operations.

All of the statistical work in the federal government is coordinated by the Statistical Policy Division in the Office of Management and Budget which is part of the Executive Office of the President. The SPD evaluates proposals for new statistical programs to determine their relative usefulness, to avoid duplication and to provide for the associated requirements of all interested parties. Approved proposals become part of the annual budget requests made by the President to the U.S. Congress.

The annual budget proposal that the President makes to Congress entails the best estimates of the Executive branch departments and the independent federal agencies for the legal authorization and financial appropriations to implement and continue government programs that those agencies determine necessary in satisfaction of identified public needs. Congress acts on proposals and eventually sends to the President for signature that legislation on which the majority of members has agreed. What the President signs into law is made up of taxing, spending and borrowing programs, and affects the distribution of income, the allocation of resources and the stability of employment, prices and wages. State and local governments follow a similar path in implementing programs which they have made their responsibility to provide.

Each agency, each department, each level of government, in its own way, affects overall welfare.

#### 4. U.S. Government Index Series

The Consumer Price Index (essentially a Laspeyres index) as it is popularly referred to, has been published by the U.S. Bureau of Labor Statistics on a continuing basis since 1921. Subject to a number of changes since then, it was last modified in 1978. As can readily be understood, the buying habits of city dwellers are markedly different than those living in rural areas, and consumer buying patterns in one geographical area differ from such patterns in other areas. There are also wide differences in how the wealthy allocate their disposable income and how the poor do so. The BLS through the CPI does not attempt to reconcile all of these differences. The most recent modification of the CPI although broadening its coverage nonetheless still measures the buying patterns, and hence the cost of living of only 80 percent of the population. That segment, too, is limited to metropolitan area residents; thus, the index has limited applicability to consumer buying patterns in nonmetropolitan areas.

The CPI is compiled by BLS employees who sample prices of several thousand consumer goods and services in 23,000 establishments in 85 cities in the U.S. The goods and services in what is called the consumer's market basket are those that reflect consumer buying patterns in metropolitan areas during 1972 and 1973. The earlier CPI was based on buying patterns during 1961 and 1962, but sampling was limited to about 400 consumer goods and services. From the samples, BLS determines the most probable quantity purchased by a consumer for each good and service in the market

basket. Those quantity estimates become the weights by which current year CPI values are calculated.

Since the late 1960's, increasing use has been made of the CPI as a basis for adjustments of wages, salaries and retirement benefits. In 1972, for example, changes in the CPI were made the basis for changes in both U.S. Social Security taxes and pensions. The CPI also serves as the basis for wage adjustments in major collective bargaining agreements.

The Producer Price Index, also published by the BLS, replaced what was called the Wholesale Price Index in 1978. The PPI measures changes in finished industrial goods by questionnaire surveys by the BLS of industries, the number of which is being expanded over the next several years to 500. Since changes in the cost to produce precede changes in prices of consumer goods and services, and, for that matter, changes in investment goods as well, changes in the PPI portend what lies ahead and thus are an advance indication of the direction that prices of final goods and services will take. As pointed out earlier, prices in the industrialized economy rarely fall, so the PPI is an indication generally of stability or advancing prices.

The Federal Reserve Index of Industrial Production measures the quantity of output in manufacturing, mining and utility industries. It is a monthly index published by the FRS Board of Governors, and is determined by figures compiled by other federal government agencies and various trade associations in the private economy. Manufactures make up nearly 90 percent of the total index

weight with mining output and electric and gas utility output each contributing six percent of index weight. The index is an aggregate of more than 200 series each of which is related to its value added figures of a base year.

Indexes of output per manhour reflecting changes in productivity are published by the Bureau of Labor Statistics for major sectors of the economy as well as some 50 individual industries. These appear in monthly, quarterly and annual series.

The National Income and Products Accounts of the U.S. are compiled and published monthly by the Bureau of Economic Analysis in the Survey of Current Business on the basis of data collected from other government agencies. Annual estimates of Gross National Product and its components have been published by BEA since 1929; in more recent years the annual estimate has been supplemented by quarterly estimates. The Accounts are published in current values as well as weighted values according to an implicit price deflator which is essentially a Paasche price index.

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## THE INDUSTRIALIZED ECONOMY IN MOTION

1. The Circular Flow of the Economy

We have seen that the produced output of a mixed enterprise, industrialized economy consists of those goods and services which are consumed and of those which add to total wealth and productive capacity. The aggregate of goods and services is comprised of those produced by firms and individuals seeking a profit for their output and of those provided by elected government at all levels in response to the demands of the electorate. Produced output, that is, Gross National Product, is partially assimilated in one way or another by those who have had a hand in producing it. Output is also exchanged in part for the output of other economies.

Accordingly, the economic activity of production and its distribution is characterized by a circular flow in which there is an exchange of productive capability for claims to shares of output and the eventual exercise of those claims. Labor, capital and land are organized by producing firms, individual entrepreneurs and government as input factors of production and are remunerated for their part in producing output with the medium of exchange, money.

Government imposes taxes on income, on the exchange of goods and services and on accumulated wealth. It should be observed again that government, in taxing and in spending the proceeds, causes a partial translation of the output of the private

sector of an economy into public goods and services, and at the same time also produces directly other public goods and services for which it remunerates its employees and the capital and land it uses much in the same manner as firms and entrepreneurs do in the private sector.

With what is left to it after government takes out income and wealth taxes, the private sector of economy exerts, in part, a demand for its own produced output in satisfaction of its consumption needs. An industrialized economy also sets aside a fraction of income after taxes in a financial intermediation system of banks and similar institutions, making some or all of it available as saving for planned investment in produced output of capital goods. In this respect, individuals taken together set aside a fraction of after-tax income as personal saving. That is, they usually think of the money they withhold from consumption as money saved. The complete answer as to how it becomes saving and why it does under some circumstances and / it does not under other circumstances, is developed in the succeeding chapters.

Individuals save as a precaution against unexpected financial crises, in order to consume more in the future and to provide replacement income in the future. At the same time, individuals may also set money aside out of taxable income not deliberately to save but in speculation of a change in the value of money.

Firms also set aside a fraction, large or small, out of after-tax income as saving which is referred to as retained earnings. Firms by and large retain earnings to make further direct investment in their operations. But since investment in capital for the individual firm is not a continuous phenomenon, the firm may set aside accumulating retained earnings over a period of time and loan it in a variety of ways to government, other firms and individuals at large. Thus, individuals and firms both withhold or set aside a fraction of after-tax income partly as anticipated saving, partly in speculation of the changing value of money, and partly to make direct but lagged investment in productive capital.

We have emphasized in Chapter 1 that the saving-investment mechanism makes it possible for an economy to accumulate capital and that to maintain the buildup in productive capital, an economy must also replace existing capital as it wears out or becomes obsolete.<sup>1</sup> From this, and our discussion in Chapter 1, we can see there is a dual impact to the accumulation of capital. On the one hand, it reflects part of the running total demand for output of final goods and services; on the other hand, it makes possible an increasing level of output over the long run.

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<sup>1</sup>The saving realized by an economy as earlier pointed out is made up of personal saving and retained earnings of firms representing new investment. Replacement of obsolete or worn-out capital is not new investment but a retransformation of saving made in the past.

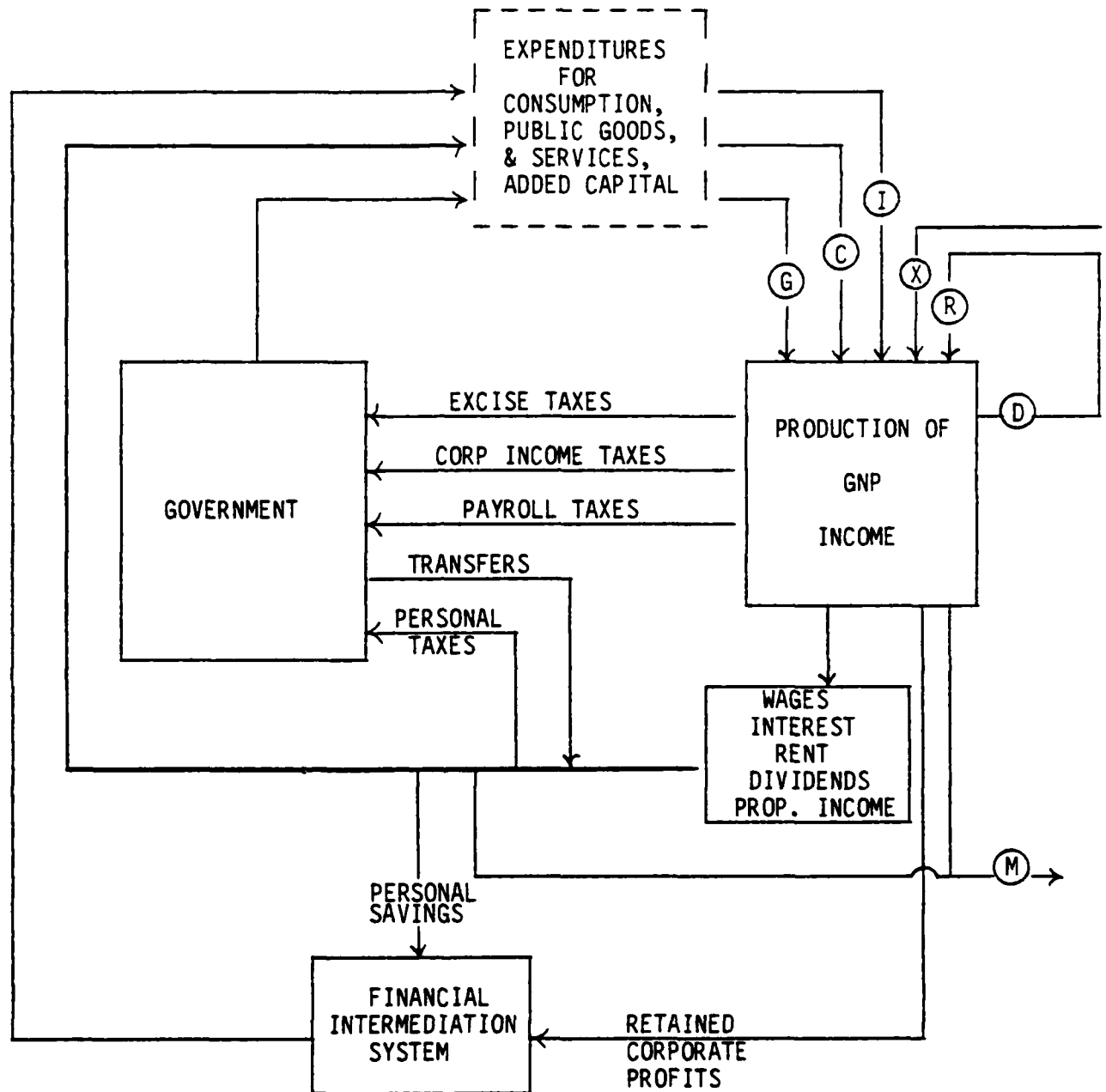
Thus, as we have already learned, demand for final goods and services is comprised of consumption demand, investment demand, autonomous and variable in nature, and capital replacement demand which incidentally may not necessarily be equal to depreciated capital.<sup>2</sup> Added to that is the demand that government at all levels makes on the economy with its expenditures to provide public goods and services. However, in our initial development of the circular flow of the economy let us make the simplifying assumptions that capital replacement demand is always equal to depreciation and that all government expenditures emanate from a central authority. In economic terms, we will do reality no great harm, and such an assumption considerably eases our initial analytical task.

As shown in Figure 6-1, a simplified diagram of the circular flow of the economy during the course of a year, taxes and money set aside out of after-tax income are diversions or leakages, so to speak, from consumption demand that conceivably would otherwise take place out of income payments to labor and other factors

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<sup>2</sup>As brought out in Chapters 3 and 4, gross private domestic investment is made up of additions to existing capital, here termed simply investment and replacement of depreciated capital. In this respect, capital is worn away on a rather continuous basis and becomes increasingly obsolescent with age. At the same time, a firm accounts for wear and tear and obsolescence on a continuous basis, deciding at the time of investment how it will recover the cost of an asset over what it anticipates will be its useful life. A large firm having many capital assets accumulated over a number of years usually but not necessarily is replacing some of its assets each year and generally is using its depreciation allowances for this purpose. But for the individual firm and the economy as a whole, replacement demand in any one year may or may not be equal to allowances made for depreciated capital.

# CIRCULAR FLOW OF THE ECONOMY



$GNP - CCA = NNP$   
 $NNP - BUS\ TX = NI$   
 $NI - CORP\ TX = PROFIT$   
 $PI - PERS\ TX = CI = DI$

CAPITAL WIDENING  
 CAPITAL DEEPENING  
 TECHNOLOGICAL ADVANCES  
 IMPROVED LABOR SKILLS

FIGURE 6-1. Circular Flow of the Economy

of production. These diversions flow into the control of government and the control of the financial intermediation system. n that at some moment in time labor were fully employed, if for some reason or other, the diversions or leakages out of the direct flow of consumption demand were not fully reintroduced into the circular flow of the economy as intended investment and government spending, aggregate demand would be insufficient to absorb total output produced by the joint cooperation of all factors of production. As we shall see in some detail, inventories of goods and services would accumulate on producer's shelves as unintended investment, precipitating reductions in output, employment and income. The reductions would take place because producers would seek to eliminate accumulating inventories and to adjust output to demand. The reductions would continue until government expenditures and intended investment were once again equal to the leakages of taxes and money set aside in the financial intermediation system. At that point, the transactions flow into government and the financial intermediation system would equal the flow out, so to speak.

By the same token, were the economy operating at less than full employment, and intended investment and central government expenditures were increased so that they exceeded saving and taxes, aggregate demand would exceed supply and inventories of goods and services on producers' shelves would fall, precipitating increases in output and employment and inducing further investment. In the

short run, given that saving is a fixed proportion of income, as national income increased so would saving and taxes until once again those leakages would equal investment and government expenditures, or said otherwise somewhat figuratively, the flow into government and the banks and other financial intermediaries would be matched by the flow out. Forces motivating changes in output, employment and income would be said to be in balance. That is, the economy would be in equilibrium at one moment in time.

Figure 6-1, however, being a diagram of an economy at one moment in time, does not show the effect that accumulating and employed capital has on productive capacity. As we have seen in Table 4-4, for the most part, net investment is the formation of new productive capital, and the output capability of the economy expands as investment proceeds over time. That is, as we discussed in Chapter 1, there is an expansion in Gross National Product that can take place as the result of investment. Were it not for investment, there would in general be no increase in productive capacity.<sup>3</sup>

One should also be aware that were not investment made and depreciated capital replaced, productive capacity would fall. We recognize, too, that to satisfy environmental and social

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<sup>3</sup>Were all income devoted to consumption, there would be no saving, and consequently, there could be no investment. Resultingly, unless there existed costless vintage technological improvements, productive capacity for a given labor force, not increasing its labor skills, would not increase and so the standard of living would stagnate.

considerations, investment also takes place which results in no expansion of capacity or visible increase in its efficiency.<sup>4</sup>

As we shall see, disparities between what is being diverted out of the main flow for consumption demand and what is being fed back into it are a recurring problem. Figure 6-1 is an overly simplified diagram of the movement in an economy and masks many of the elements of the circular flow that we will investigate at length in later chapters. Changes in the rate of investment in plant and equipment, construction and finished inventory cause total demand to fluctuate which in turn affects the level of output and employment, bringing about cyclical undulations in those variables. Changes in consumption and saving patterns also have their impact on output and employment, as do changes in government taxes and spending.

## 2. Problems in the Circular Flow

Once upon a time, as brought out in Chapter 1, it was generally thought an industrialized economy was basically self-regulating and tended towards full employment output by virtue of the inherent flexibility in output prices and wages, and by virtue of the equilibrium between intended investment and planned savings that flexible interest rates provides. This view of the world

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<sup>4</sup>For example, the mandated investment that is now taking place to satisfy environmental protection requirements is an investment to reduce environmental damage and its costs, in terms of better health, less plant depreciation, less product spoilage, and the like. In this way, investment is bringing about not a direct increase which means the same output at lesser cost. Thus, the reductions in costs of environmental damage, poor health, physical plant deterioration and the like may exceed the investment required to bring them about.



created by classical and neoclassical economists of the last century is not without its adherents today nor without merit but generally it ignores the institutional makeup and rigidities of the industrial economy. The term, classical economics, is associated with that body of theory incorporating the concepts of rationality of choice, pure competition and self-interest. In the old days, before the Great Depression of the 1930's, a general view was also held that whatever money was set aside out of earned income by firms and individuals constituted planned saving. That is, firms and individuals set aside money in the anticipation of putting it into some productive investment either directly or by making it available to others for such purposes. Saving was a strict function of the interest rate. In such a scheme there was no room for money being deliberately withheld from the circular flow of the economy. Money was withheld only for the purpose of reinjecting it forthwith back into the economy. Thus, if aggregate demand were weak relative to total output, prices would fall and interest rates would soften, encouraging increased consumption and intended investment while discouraging saving. At the same time, wages would adjust to changing demand conditions for labor so that full employment would be reached.

In spite of accumulating evidence to the contrary, a general belief was held that the flexibility in interest rates, wages and prices would limit the undulations in demand and output so that unemployment would be of a frictional nature only. The Great Depression badly damaged many of the illusions of classical economics. Experience has taught us that in the face of falling

demand for output and labor in a latter day, industrialized economy, the price level and wages will not fall readily and may even rise as we discuss later in this text. At any particular time, if total demand exceeds total output when the economy is operating at less than full employment, producing firms will increase output and employment, and product prices are certain to rise as the result of expanded use of existing capital.<sup>5</sup> If total demand exceeds total output when the economy is at full employment, output cannot be increased further, and the excess demand will be translated into rapidly rising product prices.

We also now generally accept the notion that a recurring inconsistency between intended investment and money withheld from the circular flow can inhibit the industrialized economy from maintaining stabilized full employment output. It is important to understand, however, that an inconsistency between intended investment and what is set aside out of income does not mean that actual investment is less than that set aside. If out of national income money is withheld from the circular flow, investment automatically takes place but it may not all be intended investment. For intended investment to take place, there must be direct investment from money withheld or the money must be made available by those who set it aside for others to invest. If money set aside out of

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<sup>5</sup>In the short run with fixed plant and equipment, increased output will be produced at rising marginal cost. Accordingly, producing firms will offer increased output at higher prices.

the circular flow simply increases the idle balances in the financial intermediation system, demand for output will be less than that produced. The difference between the two will be unintended investment in the form of increased producer's inventories. Thus, if money is set aside out of the circular flow, investment takes place one way or the other.

The amount of money investors are willing to borrow depends to an extent on the interest rate lenders demand, and also on the return, they, the investors, anticipate from the investment. Accordingly, we can speculate that for a given money supply, there is a positive rate of interest and a level of output at which saving and intended investment may be equal.<sup>6</sup> That level of output could fall short of full employment output such that the economy would continue to grow but with substantial numbers of men and women out of work.

Let us clarify the last statement. So long as there is investment, economic growth in terms of ability to produce is taking place. Capital is being accumulated and productivity is being increased. But that does not mean automatically that full employment of labor exists. Investment can deepen the amount of

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<sup>6</sup>The discussion thus far implies more strongly than need be that investment takes place primarily with borrowed money. Actually, we know that direct investment takes place through common stock ownership of producing firms. The amount of direct investment is also influenced by market interest rates, however. That is, potential buyers of common stock are swayed by alternative yields from bonds and other such instruments relative to anticipated yields of corporate ownership. At the same time, corporate common stock expansions are influenced by price-earnings ratios which themselves are affected by interest rates.

capital per employed unit of labor; nevertheless, if planned investment is just equal to the amount of money representing desired saving, employment will not change by much. As we will see, there is an element of validity in the old classical view of things. Interest rates have a tendency to fall when demand and output slacken and lower interest rates tend to encourage added investment. However, the amount by which output and employment fall in the face of inflexible wages and prices before increased investment takes place and has its effect can be far below full employment.

To avoid that painful outcome, the United States government spends, taxes and borrows money in anticipation of making up for the gap that might otherwise exist between high employment output and the demand for that output, or what is the same thing, making up for the gap that might exist between what is being set aside out of income and intended investment at high employment. The government also causes adjustments in the ability of commercial banks to extend credit in order to encourage high employment demand. The efficacy of government fiscal and monetary policy, however, is open to question, and as we will see there are divergent views on the subject.

Whether or not wage and price adjustments ever beneficially motivated an economy towards stabilized full employment as the old classicists believed, the mixed enterprise, industrialized economy of today is characterized by downwardly inflexible wages and prices, and in the face of disturbances tending to depress

demand, there are no remedial movements of the two tending to relieve downward pressures on output and employment.

The industrialized economy also faces the problem of economic shocks brought on by sudden changes in international trade, in the availability of energy and raw materials as well as the recurring obsolescence of its labor force. As we will bring out, the hand of government by way of spending, taxing and borrowing, and money supply adjustments is compelled to compensate for the detrimental undulations in economic activity thereby generated.

Yet we well know the presence of government does not preclude economic undulations. But the prevailing view is that the undulations are milder than they would be in the absence of government's intervention. Nevertheless, we should be well advised to examine very carefully the application of fiscal and monetary tools to the problems of unemployment and accumulated but unused capital. We want to know specifically why the variables in the economy that cause changes in employment and output themselves change the way they do, and just what the full impact of government fiscal and monetary policy on those variables is.

### 3. Consumption, Saving and Investment

Having discussed the circular flow of the mixed enterprise, industrialized economy in general, descriptive terms, we are now in a position to examine the phenomenon in detail and in so doing, identify its parameters and determinant variables, and how changes in them affect the values of the determinate or dependent variables of the system. In later chapters, we will

investigate the ways in which fiscal and monetary policy influences the determinant variables in order to bring about desired changes in the dependent variables.

From Figure 6-1, we observe that aggregate demand for any one year for output of goods and services,  $Y$ , is made up of consumption,  $C$ , autonomous investment,  $I$ , government expenditures,  $G$ , replacement of depreciated capital,  $R$ , and exports,  $X$ . We then can express aggregate demand as

$$(1) \quad Y = C + I + G + R + X$$

We also observe that the after-tax amount realized as personal income by individuals is divided between consumption and saving. That amount is set aside as saving in various forms to finance investment either directly or through a myriad of nonbank financial intermediaries, such as insurance firms, pension plans, and savings and loan associations. Repeating what we have already observed, investment is of two natures. There is intended investment reflected in demand for planned increases in capital; but there may also be those increases during the year in the finished inventories of capital goods manufacturers which they had hoped to sell but could not. The latter are accordingly unintended investment on the part of those manufacturers but investment, nevertheless. As we saw in the last chapter, in national income accounting, investment in added capital plus replacement of depreciated capital comprise gross private domestic investment. As we have discussed, the setting aside of income in the form of financial intermediary balances does not automatically constitute

saving, in the sense of financing intended investment; and as a matter of fact the varying rate at which idle balances of this sort accumulate thwarts the effectiveness of monetary and fiscal policy. But that is getting ahead of our development.

Recapitulating what we have said with respect to output, income, taxes and saving, we observe that output net of depreciation provides for the payment of income after business taxes to the factors of production, that is, labor, land, capital and entrepreneurship. Wages, interest, rent and profit are taxed by government which returns some of what it collects in taxes as transfer payments to individuals.<sup>7</sup> Thus, in general terms, after transfers and taxes,  $T$ , producing firms retain earnings,  $Sc$ , and in the absence of consumer interest, individuals divide their disposable income,  $DI$ , between saving,  $Sp$ , and consumption,  $C$ . Setting aside exports and imports for the remainder of this discussion, we have,

$$C + Sp + Sc + T = \text{NNP or simply } C + S + T = \text{NNP}$$

Adding depreciation,  $D$ , we have

$$\text{NNP} + D = \text{GNP}$$

We refer to that fraction of after-tax income allocated to consumption as the marginal propensity to consume,  $b$ , and in terms

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<sup>7</sup>We observed in Chapter 4, the extent of government transfers; it should also be noted that some of the income that producing corporations in the U.S. realize are taxed twice, once as corporate income, and then that part of after-tax income that is paid out as dividends is taxed again as personal income.

of the short run, consider it a positive constant less than one. The consumption function was first proposed by J. M. Keynes in 1935, in his The General Theory of Employment, Interest and Money. The function as Keynes described it represented the rate of aggregate consumption for an economy as a whole, and it related consumption demand to aggregate income. In order to facilitate our understanding of the role the function plays in the circular flow of the economy, for the time being, we make the simplifying assumption that payments to all factors of production eventually become personal income of which  $bY$  is devoted to consumption. In any industrialized economy, it is reasonable to assume, too, that should output fall to zero there would be some minimal level of consumption that would autonomously take place. Accordingly, we have

$$(2) \quad C = a + bY;$$

substituting (2) into (1) we then have

$$(3) \quad Y = a + bY + I + G + R$$

As a preliminary to depicting (3) in graphical terms, Figure 6-2 relates the equality of demand for and the supply of output as net national product by the  $45^\circ$  diagonal line. That is, any point on the diagonal line represents equal values of aggregate demand and output.



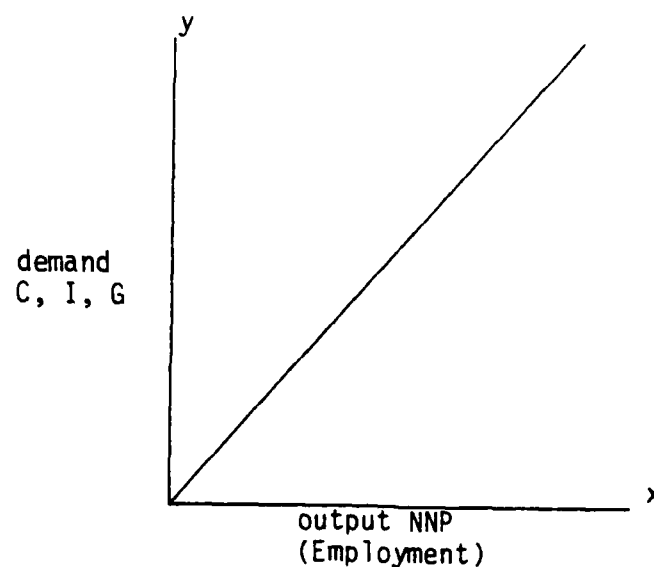


FIGURE 6-2. Demand and Output

Observe that the graph relates demand to produced net national product. The demand for and the output of replacement capital is omitted from the graph. Thus, for purposes of illustration, we make another simplifying assumption that capital does not depreciate. Nevertheless, we should not forget that installed capital depreciates and is replaced. Our assumption for the time being is that the amount of capital wearing out or being discarded is concurrently being replaced by a like amount of new capital. As we will see in time, this assumption is somewhat heroic and unrealistic. Capital may or may not be replaced at the time planned for when it was originally acquired for a variety of reasons. Thus (3) becomes

$$(4) \quad Y = a + bY = I + G$$

Since (4) is an expression for aggregate demand, if we superimpose (4) on Figure 6-2, then the intersection of the demand curve with the 45° diagonal line would represent a point of equilibrium between output and demand for it according to the consumption function. Thus, we have Figure 6-3.

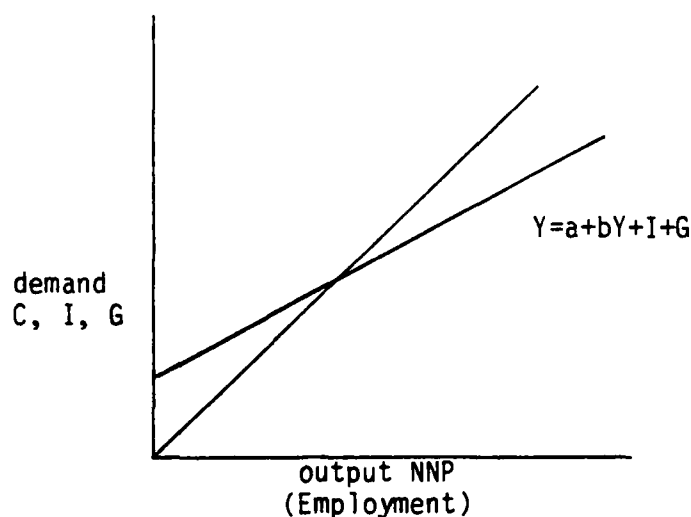


FIGURE 6-3. The Consumption Function

Equilibrium exists in a system when there is a balance between opposing forces tending to move it in one direction or another.

The equilibrium level of output is the level at which the demand for and supply of goods and services are equal. The sum of injections of government and private investment expenditures must be equal to the tax and anticipated savings leakages shown in Figure 6-1. We can, accordingly, depict the equilibrium level of output shown in Figure 6-3 in terms now of  $I + G$  and  $T + S$  as shown in Figure 6-4.

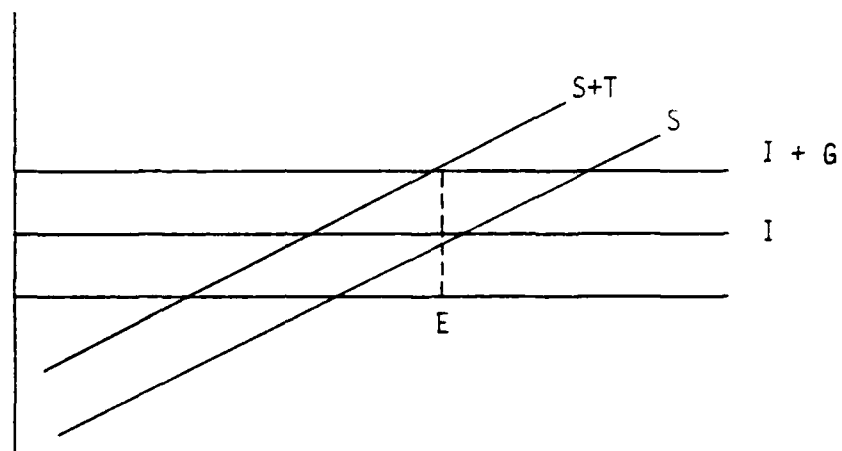


FIGURE 6-4. Injections, Leakages and Equilibrium

Of course, it can readily be seen that for any level of output, the equilibrium point in Figure 6-3 must be the very same equilibrium points in Figure 6-4.

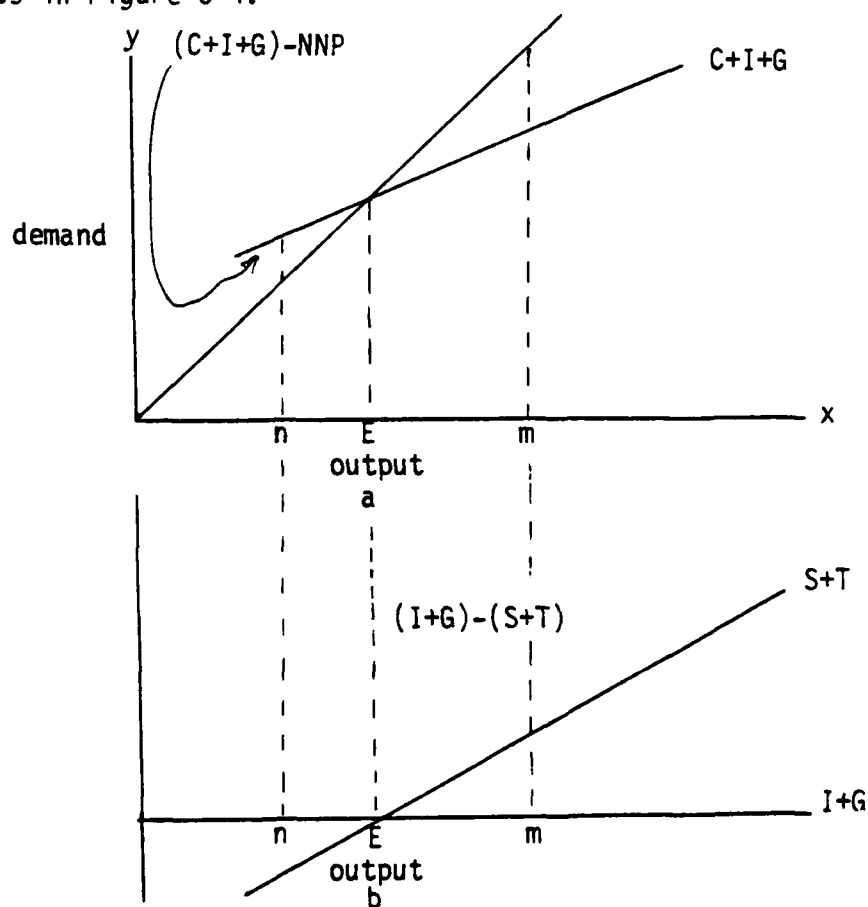


FIGURE 6-5. Leakages, Injections, Demand, Output and Equilibrium

We observe from Figures 6-3, 6-4, and 6-5 what we have remarked before with respect to the circular flow of the economy. The equilibrium level of output occurs where expenditures equal the current supply of goods and services, or what is the same thing, where saving and taxes are equal to private investment and government expenditures. Should conditions be otherwise, output would be at a disequilibrium level and as we have observed in the preceding section forces would be set in motion for the circular flow to strike anew an equilibrium between aggregate expenditures and output. For example, if demand at some moment in time exceeded what was produced at point  $n$ , injections in the form of investment and government expenditures would exceed leakages of savings and taxes. As shown in Figure 6-5, the difference between demand,  $C + I + G$ , and output,  $NNP$ , would be identical to the difference between investment and government spending,  $I + G$ , and savings and taxes,  $S + T$ .

Inventory levels would fall because demand would at first draw off more output from inventory shelves than was being added. But as inventories fell, output and employment would rise as producers responded to increased demand. Concurrently, out of rising income, saving and taxes would grow. Thus, as output expanded to satisfy demand, saving and taxes would grow to meet investment and government spending. When leakages were equal to injections, the economy would once again be in short-term equilibrium and so long as the rates of movement of income, saving, taxes, consumption, government spending and investment remained the same, the economy would remain in balance.

However, we must not forget that so long as investment is taking place, output from an increasingly productive economy would have to change and along with it everything else. So when we say that the economy under the circumstances we describe would be in equilibrium, we refer to one moment in time. Could it remain in equilibrium as it moves through time or for that matter even achieve equilibrium at one moment in time? Possibly so, as we discuss in Chapter 11, but we will find that in reality it would be highly unlikely to do so. We speak of equilibrium, but the reader should understand that it is basically a hypothetical construct. Demand and output are always changing and an economy is subject to forces over which it has no control.

Referring once again in Figure 6-5, should demand fall short of output, the difference,  $(C+I+G) - NNP$ , would be equal to the difference,  $(S+T) - (I+G)$ . Leakages would exceed injections and a recessionary movement would set in as the flow of output onto inventory shelves would slow down to the rate of demand for output. Demand and output would once again be equal as would saving and taxes, and investment and government spending. The economy would be in equilibrium.

#### 4. The Multiplier

Having restated our original observations in algebraic and graphical terms, we are now in a position to consolidate what we have developed and to make some tentative assessments about the workings of the industrialized economic system as perceived by Keynes. From (3) we see that we can rearrange terms in order to

express output,  $Y$ , as a function of the other elements in the equation. Therefore, incorporating  $T_0 + tY$  for  $T$  into (4)

$$(1 - b + bt)Y = a + I + G - bT_0$$

$$(5) \quad Y = \frac{a + I + G - bT_0}{(1 - b + bt)}$$

From our graphs and equation (5), we observe that equilibrium  $Y$  evidently depends upon the given levels of consumption, private investment and government spending, and is in fact a multiple,  $\frac{1}{(1-b+bt)}$ , of their sum. This feature of equation (5) immediately raises a question as to the impact on  $Y$  at less than full employment of a change in  $a$ ,  $I$  or  $G$ . We find our answer by considering an incremental change in any one of the three from some equilibrium output at less than full employment. Thus,

$$Y + \Delta Y = \frac{a + G + I + \Delta I}{1 - b + bt}$$

$$\text{less } Y = \frac{a + G + I}{1 - b + bt}$$

$$\Delta Y = \frac{\Delta I}{1 - b + bt}$$

From which we see that an incremental change,  $\Delta I$ , in autonomous investment would precipitate a multiple increase in output as producers responded to increased investment demand. By the same

token, a shift,  $\Delta a$ , in autonomous consumption, or a shift,  $G$ , in government spending would have the same sort of multiplied effect on output.

We have previously remarked that in the circular flow of the economy, labor's wages as its factor payments become in part consumption demand, absorbing some of new national product from which wages are once more paid. At the same time, we know that out of labor's disposable income, that which remains after consumption expenditures is set aside in banks and nonbank financial intermediaries. Together with retained earnings of producing firms, the money set aside out of disposable income makes possible intended investment. In the presence of a balanced government budget, for the economy to be in equilibrium, the two, money set aside out of personal income and retained earnings, and intended investment must be equal. This suggests that the equilibrium of the economy at any one time is vulnerable to shifts in the consumption function and to changes in investment. For, let us suppose that the economy is functioning at full employment such that the supply of net national product is just equal to the demand imposed on it by consumption, investment and government expenditures. Furthermore, for purposes of clarification, let us emphasize once more that we are considering the economy at one moment in time, understanding, nevertheless, that as investment is being made, the productive capability of the economy is growing. We can further assume that the growth in the labor force is being absorbed by additional plant capacity at the same time that the growing labor force is being

is being augmented by further capital investment. Thus, we once again distinguish the short run from the long run in which the economy is on an equilibrium growth path as the result of labor force growth and capital investment. We might add that vintage replacement of depreciated capital, because of technological advances, may add further to economic growth. For the moment, we are concerned with the short run.

Now then, if for one reason or another, investment should shift downward by some increment,  $I$ , its effect would be reduced aggregate demand, causing finished inventories to accumulate as unintended investment which in turn would cause producing firms to reduce output and of course, employment. This is shown graphically in Figure 6-6. The reduction would continue until  $Y$  had been reduced by the multiple,  $\frac{1}{1-b+bt} \Delta I$ . Naturally, employment would be affected approximately to same extent as  $Y$ . Since aggregate saving is a function of national income, saving would fall along with income until it were once again equal to intended investment. The reduction in  $Y$  that must be made to its new equilibrium can be shown as

$$s\Delta Y = I$$

$$(6) \Delta Y = \frac{1}{s} \Delta I \quad \text{where } s = 1-b$$

Should the consumption function shift downward, the same multiple effect on  $Y$  would result.



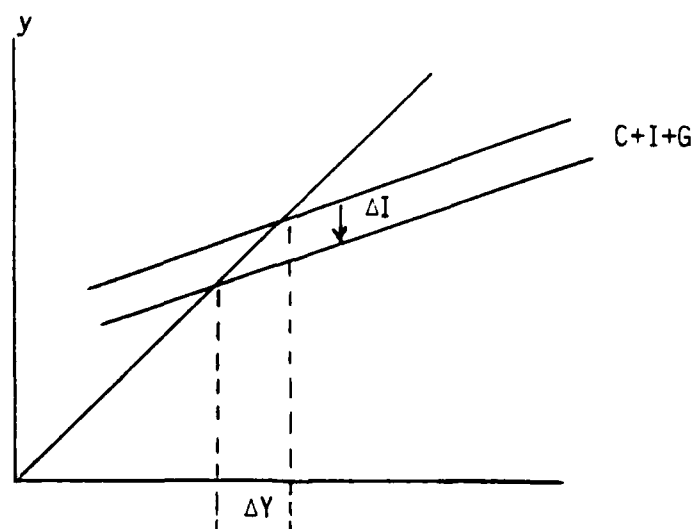


FIGURE 6-6. Reduction in Investment and Disequilibrium.

Shifts occur because of changed expectations and changed preferences. At any moment in time, firms may become more or less sanguine about the future, and since, as we will see, investment plans respond to demand for output, the experience of the moment can influence investment in productive capacity. If demand for output is increasing, firms are more likely to increase investment; if demand falls off, firms may cut back on investment plans. Those changes are shifts in that for any level of income, the amount of investment is more or less than before the shift. Shifts in consumption take place because of changes in consumer preferences and changes in expectations. A change from optimism to pessimism or vice versa is sure to cause a shift in the consumption function.

So whether there is an upward or downward shift, some change in the level of income will result. We see then that a downward shift in autonomous investment, the consumption function or government expenditures causes net national product and national

income to fall by a multiple of the reduction in any of those three. The disparity between net national product that can be produced at full employment and aggregate demand is referred to as a deflationary gap as shown in Figure 6-7. The term, deflationary gap, does not in this case refer to any drop in prices and wages that might have accompanied a fall in demand but rather to the lost income, consumption and investment that could otherwise be realized if demand were sufficiently high to absorb full employment output. As a matter of fact, if a downward shift in consumption, investment or government spending were to precipitate a deflationary gap, prices and wages would remain relatively constant or possibly even rise because of institutional rigidities and central government fiscal and monetary policy.

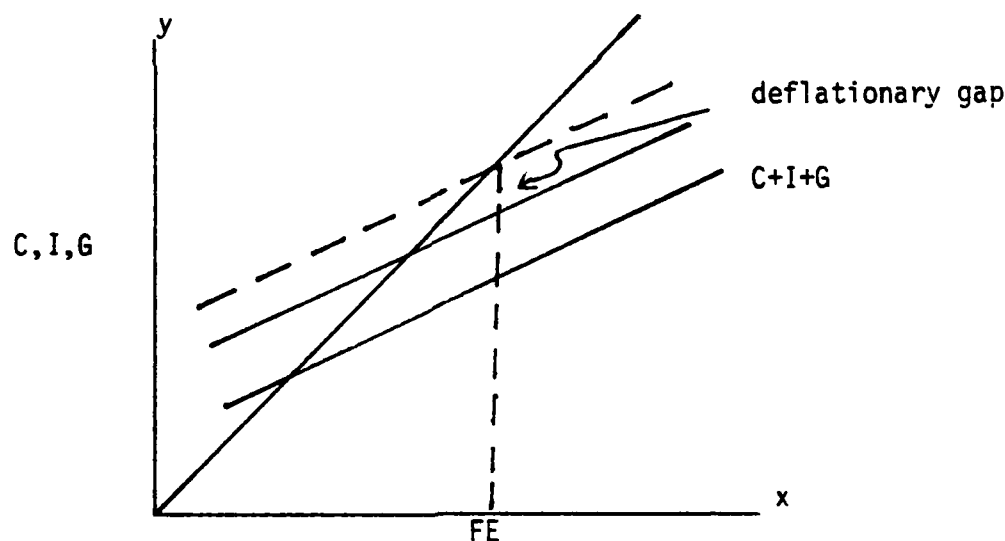


FIGURE 6-7. The Deflationary Gap.

On the other hand, if an economy is in full employment equilibrium, and for one reason or another, intended investment were to increase, an inflationary gap would be precipitated as

shown in Figure 6-8. The gap so precipitated would indeed cause wages and prices to rise while output, as high as the economy could produce with its given capital and labor force, would not increase at all. The gap would be closed by an increase in prices sufficient to absorb the excess demand created by the investment increase. As prices rose, money income would rise, the amount set aside out of income would rise until the transactions flow of money into the banking system so to speak would be equal to the outflow subsequent to the upward shift in planned investment.

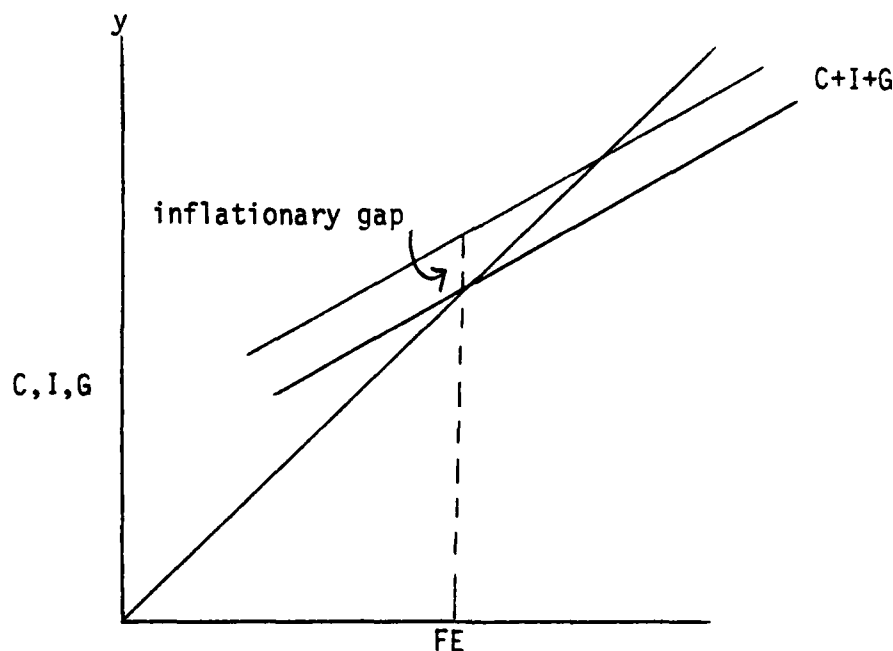


FIGURE 6-8. The Inflationary Gap.

##### 5. Variations on the Basic Theme

There is no doubt that the industrial economy consumes less than it produces except in the most depressed conditions. But the extent to which the Keynesian consumption function reflects the apportionment of realized income into consumption and saving is

open to question. Statistical tests seem to show that there really are two consumption functions, a short-run function and a long-run function. For the United States, the long-run function would appear to have a much higher marginal propensity to consume, MPC, and would intersect the vertical axis in Figure 6-3 at the origin. On the other hand, studies conducted on consumption and income data for relatively short periods of time seem to indicate a function with a much lower MPC, but apparently one that has shifted upward over a lengthy interval of time as the United States has experienced increasing real income. The view that consumption is related to income in the short run as Keynes proposed but that the function shifts upward over time is referred to as the absolute income hypothesis.<sup>8</sup> Yet another view relates consumption to the business cycle. In the relative income hypothesis, there is, too, a long-run consumption function with a high MPC in comparison to the MPC of a short-run function tied to the business cycle. Accordingly, when output, employment and income fall off in a recession, households tend to maintain their consumption patterns. Thus, consumption becomes an increasing proportion of income, producing a lesser short-run MPC. As the business cycle runs its course and income rises, households cautiously exhibit the short-run MPC until reaching their previously high income at which point

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<sup>8</sup>Among those whose names are associated with the absolute income hypothesis is James Tobin. See "Relative Income, Absolute Income, and Saving," in Money, Trade and Economic Growth, Essays in honor of John H. Williams, The Macmillan Co., 1951, pp. 135-56.

they confidently increase consumption as a proportion of increasing income.<sup>9</sup>

Still another view that partially reconciles Keynes' function with the business cycle proposes that households look upon their income at any one time as comprised of what they view as permanent income and what they look upon as transitory income. However, according to the permanent income hypothesis, there exists a functional relationship only between permanent consumption and permanent income. As far as transitory consumption and transitory income go, either can be positive or negative, depending upon how consumers view their actual income and actual expenditures. The result of this hypothesis is that there is a long-run consumption function, reflecting the relationship of permanent consumption and income, with a higher MPC than a short-run function relating actual consumption to actual income.<sup>10</sup> Each of the hypotheses together with Keynes' original idea has some validity and adds to our insight of the circular flow, but none of them by itself gives a totally convincing description nor can any one of them be used with any confidence to predict the future course of employment, output and income.

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<sup>9</sup>See J. S. Duesenberry, Income, Saving and the Theory of Consumer Behavior, Harvard University Press, 1949.

<sup>10</sup>Milton Friedman sometime ago proposed one version of the permanent income hypothesis. See A Theory of the Consumption Function, Nat'l Bureau of Economic Research, 1957.

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## MONEY AND INTEREST RATES

1. The Saving-Investment Function, and the Demand for and the Supply of Money

We have characterized the high employment circular flow of the economy as being susceptible to disruptions because of the differences that may exist from time to time between that amount siphoned off as increase in some bank and nonbank balances and as taxes; and what is fed back into the circular flow as intended investment and government expenditures. This view is in keeping with Keynesian theory, but there are those who argue that the susceptibility is of a limited nature. However that may be, the process of translating realized income into demand for goods and services through a financial system comprised of banks and nonbank intermediaries is a very complicated one, indeed, and it is only through deliberate analysis of its many aspects that we will understand it.

In this respect, when we refer to money being siphoned out of the circular flow, we refer to that amount out of realized income not expended for consumer goods and services. As we have already brought out directly and indirectly, that amount which we say is siphoned off is that part of income set aside by individuals and households as would-be saving and increases in idle transactions balances together with that amount set aside by corporations and institutions as their savings and by governments as tax revenue. To repeat, it is that part of income not accommodating

transactions for consumer goods and services. Obviously, the financial intermediaries must find avenues to get that amount back into the mainstream of demand for goods and services. We have already suggested and will bring out in greater detail in the discussions ahead that the intermediation system as custodian and agent of that money may not be able to translate all set-aside income into demand for goods and services, or it may add to the demand represented by that amount by way of increased credit. Thus, in one way or another, set-aside income finances investment, government expenditures, and some consumer demand, or otherwise some part of it will lie fallow as increased idle balances in the intermediation system.

For how long and in what way balances of money lie idle are at the heart of the matter between two opposing schools of thought on the saving-investment process. Classical theory of the nineteenth century, still influencing thought today, taught that the interest rate would equilibrate the rate of money leaking out of the economy with investment demand for money. The basis for that view probably rested with the assumption, true to a great extent in the early part of the century, that those who saved or set money aside out of income were the same individuals who invested. Since in classical theory, there was no reason for anyone to hold out idle money from income when it could be put to use as invested capital, leakages and injections into the circular flow of the economy tended towards balance. The monetarist school, having its roots in classical economics, looks upon organized intermediation as a mechanism which readily achieves the translation of set-aside



income as saving into demand for goods and services. That school does not look upon income set aside after taxes as existing except as saving that finances intended investment. Quite in contrast to that view, the Keynesian school sees in the saving-investment process the potential for a recurring inconsistency, and looks upon the aggregate process of setting aside some of realized income as reflecting in part a changing disposition to hold money for its own sake. Our discussion of the circular flow of the economy in Chapter 6 tends to reflect this view to some extent. Clearly, it behooves us to analyze the two opposing points of view with care. We may anticipate that each explains partially but not wholly the way in which money moves through the financial intermediation system and what its consequences are.

## 2. Keynes Theory and the I-S Curve

Setting aside for the moment the aspect of the changing disposition on the part of elements in the economy to hold idle money balances, let us turn to the Keynesian view of the saving-investment process. In the General Theory, Keynes looks upon saving as a function of income and the interest rate. As a function of income, saving is the complement of consumption as we have already seen. Since in the Keynesian scheme, consumption is looked upon as a short-run stable function of income, one might ask, if saving is at all responsive to interest rate changes, where increases in saving for interest rate increases come from. We will defer an answer to that question for the moment, returning to it shortly.

Obviously, for intended investment to take place, it must be financed. That is, there must be an exchange of money for capital goods. In this respect, it makes no difference whether intended investment takes place as the result of borrowing, whether it results from direct investment on the part of those who have set money aside for the purposes or whether it is financed by new equity issues. So long as all the money siphoned out is pumped back into the circular flow, no problem arises. We need to remind ourselves, however, that we are studying the circular flow of the economy at one instant of time. We are examining a photograph, as it were, that freezes the motion of economic activity. If investment is made, more output can result, and consequently, the monetary flow representing that change will itself undergo changes over time.

Keynes said problems arise because some fraction of disposable income set aside in bank and nonbank demand and saving deposits may not reenter the circular flow. Those who set money aside out of the circular flow are not identically those who invest, and the demand for investment money can at any one time be different than the money siphoned into the financial intermediation system. Here is much of the essence of Keynesian economics.

According to that view, the total amount siphoned out of disposable income both as idle transaction balances and as funds to finance investment or what we might call loanable funds is a function of income, and is a complement of the consumption

function.<sup>1</sup> But given that the total amount siphoned out is a function of income, the higher the interest rate structure, the greater would be the fraction of income set aside as loanable funds.

The amount set aside in idle balances and loanable funds at varying levels of income is:

$$S = (1-b)(Y) \text{ or } s(y) \quad 0 \leq S \leq 1$$

That amount moving from idle transaction balances to the status of loanable funds is:

$$F = f(n), \text{ where } F = S - \text{idle bank balances}$$

Keynes referred to what we here call loanable funds as saving and discussed the saving-investment process somewhat separately from the aspect of idle balances. Given that the level of idle balances does change, as we will see it is somewhat unseemly to separate the two, saving and idle balances, into separate compartments. We shall return to the subject of idle balances in short order, but for now let us focus on the investment demand for loanable funds.

Intended investment is also in part responsive to the interest rate structure. Business and industry will continue to invest in productive enterprises so long as the expected rate of

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<sup>1</sup>The term, loanable funds, is not associated with Keynes' theory, but for our purposes it is useful in developing and understanding of the divergencies in viewpoint on the saving investment phenomenon. The reader should understand that the term includes funds which finance investment by increased ownership in corporate stock and funds put at the disposal of diverse intermediate agents for investment of one hue and another.

return on investment exceeds the cost of the money making the investment possible. From microeconomic analysis, we know that as the use of any input factor of production is expanded, other factors being held fixed, sooner or later diminishing marginal productivity will set in. Accordingly, given the state of technology, in the short run, we can see that as increasing intended investment is made, the anticipated return thereon will fall. Apparently, then, investment is inversely related to the rate of interest--as interest rates fall, investment tends to increase since the lower cost for capital use would make its investment more attractive. On the other hand, it might be expected that the amount of loanable funds would tend to increase as interest rates increase. Thus, we can anticipate that there is an interest rate at which loanable funds and intended investment may be equal. Graphically,

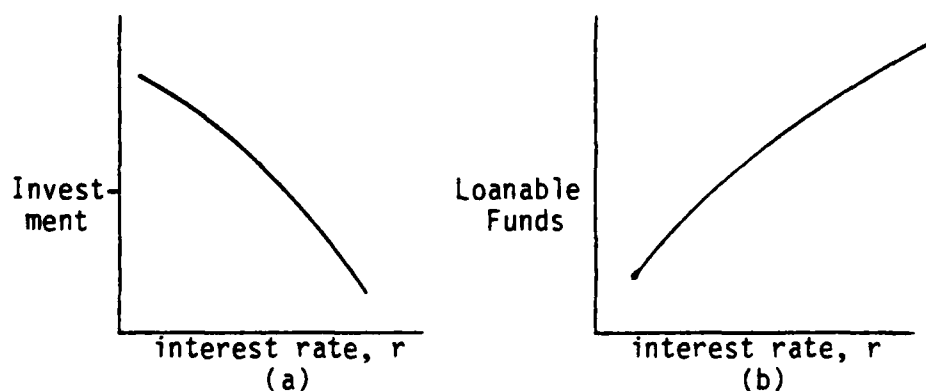


FIGURE 7-1(a), (b). Investment and loanable funds functions.

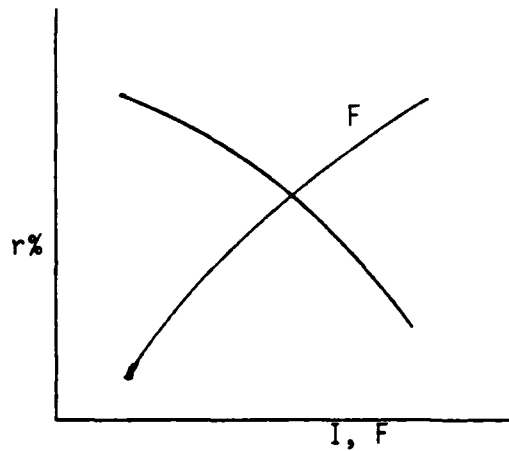


FIGURE 7-2. Equality of loanable funds and investment.

From Figure 7-2, we see that for a given level of income,  $Y$ , there is an interest rate at which loanable funds and investment are equal. As we will see in detail in succeeding chapters, commercial banks in the United States are not by themselves the conduit through which flow loanable funds to satisfy investment demand with a given money supply although their role in this respect is changing. In fact, in this part of the complicated process, they play a minor role. The satisfaction of investment demand from money siphoned out of disposable income is for the most part realized by a transfer from commercial bank demand deposits accounts in which the money accumulates to the accounts in nonbank intermediaries of those intending to invest. That transfer is effected by nonbank financial intermediaries acting in effect as brokers between those supplying loanable funds and those making use of the funds for investment. On occasion a direct transaction between lender and borrower takes place.

Accordingly, it is highly unlikely that loanable funds would be available at less than the interest rate on saving or transactions balances.<sup>2</sup> Since the amount of money,  $S$ , set aside out of the circular flow of the economy is a function of income, we could anticipate that, as that amount increased with increasing income, the interest rate for loanable funds would fall, causing the equilibrium rate at which  $F$  and  $I$  were equal to be successively lower with increasing income. By adding to our assumptions that investment is further increased by increasing income, we can arrive at a schedule of interest rates and income at which investment and loanable funds are in equilibrium. The Figures 7-3(a) and (b) depict the derivation of the schedule.

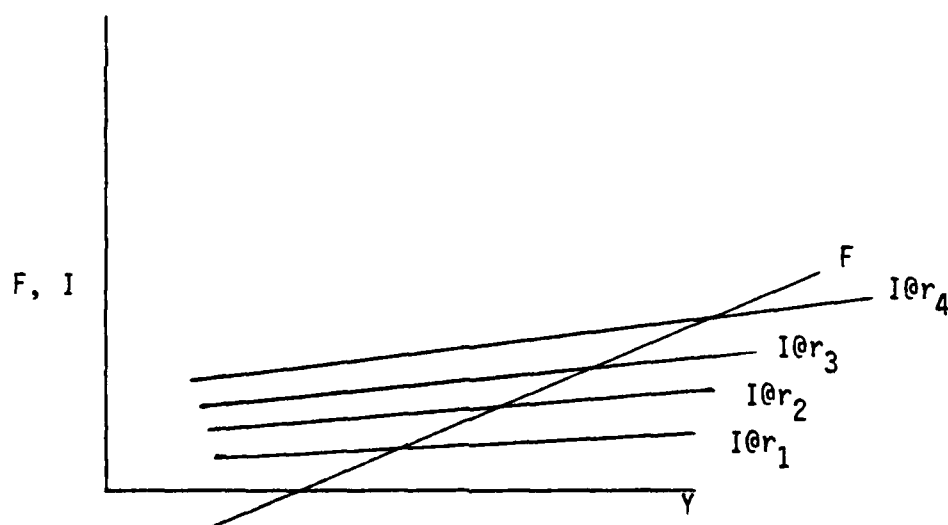


FIGURE 7-3(a). The I-S Curve.

<sup>2</sup>As is fairly well known, commercial banks and nonbank intermediaries offer a range of interest rates according to maturities of deposits and the amounts involved. For purposes of illustration, obviously, we are oversimplifying a very involved system intermediaries employ to attract deposits.

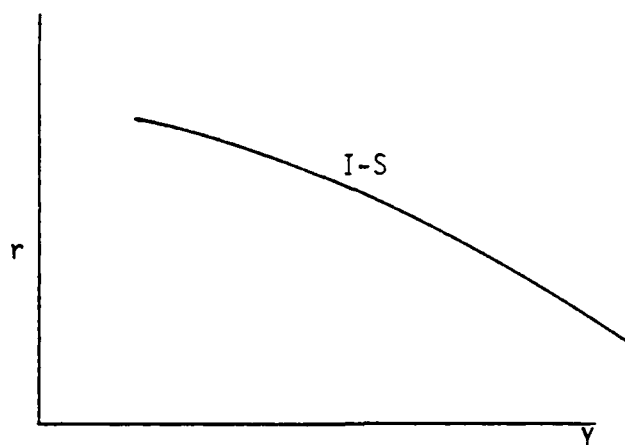


FIGURE 7-3(b). The I-S Curve

The I-S curve, the brainchild of John Hicks, is the locus, then, of interest rate and income combinations at which investment demand and the supply of loanable funds are in equilibrium.<sup>3</sup>

Returning to Figure 7-2, we emphasize that the two curves, I & F, are for a given level of income. Thus, what we see for the I curve is essentially what we see in Figure 7-3(a). For any given level of income, investment increases for falling rates of interest. As we have pointed out in Keynes' theory, there is the potential for an inconsistency to develop between the availability of money to finance investment and the demand for investment funds at a positive rate of interest. That is, pessimism may influence investment plans so strongly that the two, the supply of and demand for loanable funds, would be equal to each other only at a negative

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<sup>3</sup>J. R. Hicks, "Mr. Keynes and the Classics: A Suggested Interpretation," *Econometrica*, April 1937, pp. 147-59. See, too, A. H. Hansen, *Monetary Theory and Fiscal Policy*, New York: McGraw-Hill, 1949, ch 5.

rate of interest. Since a negative interest rate is a most unlikely possibility, the result would be a jamming up of set-aside income in the intermediation system.

Ours is not a barter economy, and the remuneration of the factors of production for their part in producing Gross National Product, the demand for consumption goods and services, the saving and investment that take place, the taxes that government collects and the demand for GNP that it exerts, are all effected through the medium of exchange, money.

### 3. The Keynesian Demand for Money and the L-M Curve

Keynes departed from the traditional explanation of money as a medium of exchange and a storehouse of value to introduce a new approach in delineating the motivation for holding money: the transactions motive, the precautionary motive and the speculative motive. The first motive reflects the need for money as a medium of exchange, but the other two reflect the uncertainty with which the individual views the future. By the precautionary motive, Keynes referred to the inclination of individuals to set money aside in idle balances to meet unforeseen circumstances of one sort and another which invariably arise in life. There is nothing particularly debatable about the first two motives, but Keynes' third motive for holding money was an entirely new concept that was completely absent from classical theory. To Keynes the desire to hold money stems from the impact that changing levels of interest rates have on the market value of fixed income securities, or in his lexicon, bonds.



At any particular time, if interest rates are historically high and thought to be as high as they can be relative to the foreseeable future, any one or any enterprise with money available to loan for investment purposes or to translate into other existing paper assets would certainly try to lend it out in order to realize the return represented by the high interest rates as well as the capital gain potentially achievable should interest rates fall.

On the other hand, if interest rates are historically low and low relative to what they are expected to be, there is a reluctance to part with, lend or commit money on a long-term basis because of the low yield in comparison with the risks involved, and because of the potential for capital losses should interest rates rise. As market interest rates fall, would-be lenders become increasingly reluctant to trade money for long-term bonds. The supply curve, (Figure 7-1b) for loanable funds reflect this. As the supply of loanable funds dries up, concurrently the speculative demand for money on the part of lenders, that is, the tendency for them to hold on to their own money, rises. Accordingly, the demand for money is dependent on market interest rate structure as well as aggregate income.

The demand for money also is related to the precautionary motives of individuals and firms to provide for unpredictable needs for money to satisfy contingent financial obligations of one sort and another. The precautionary demand for money tends to be inversely related to the interest rate and directly to income. The

demand for money, then, is related to aggregate income, speculative motives and precautionary motives. Symbolically,

$$L = L(Y) + L(r) + L(Y, r)$$

Since for a given money supply, the transactions demand and precautionary demand would tend to work in the same way, the demand for money can be symbolized more succinctly but less precisely as:

$$L = L(Y) + L(r)$$

Thus, for a given money supply,  $M$ , the transactions and precautionary demand for money is related to aggregate income as shown in Figure 7-4.

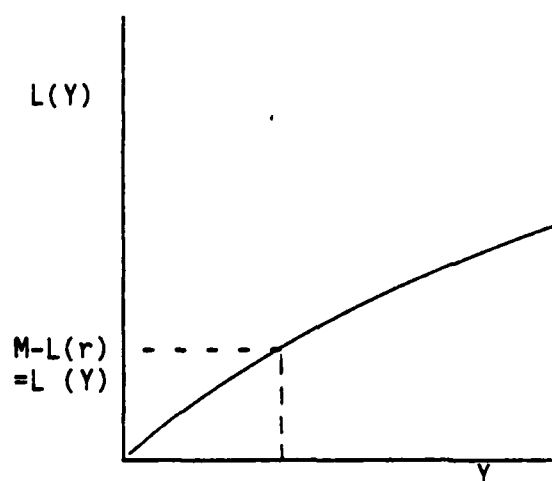


FIGURE 7-4. Transactions and precautionary demand for money.

The speculative demand for money, on the other hand, responsive to the rate of interest, can be represented graphically, in terms of

the money supply, given some level of income,  $Y$ . Thus,

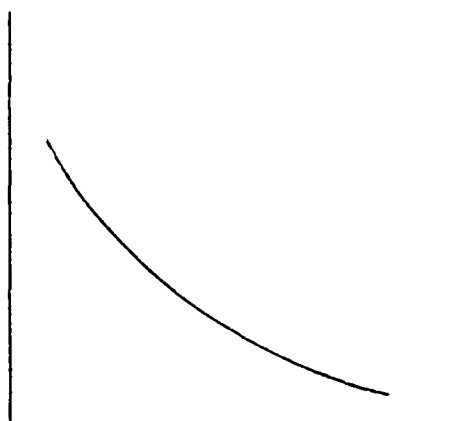


FIGURE 7-5. The speculative demand for money.

The transactions and precautionary motives having been satisfied, the speculative demand for money together with the given supply of money,  $M$ , determines the interest rate as depicted in Figure 7-6.

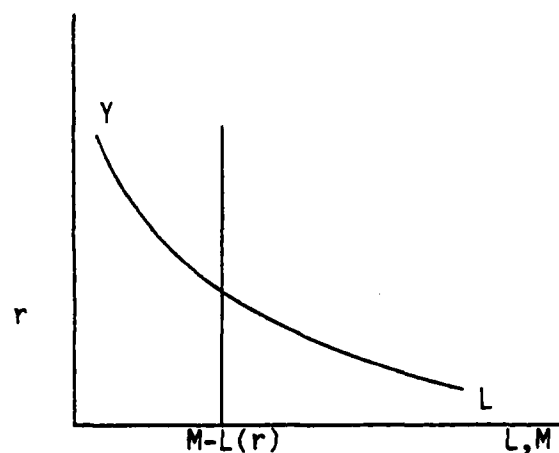


FIGURE 7-6. The interest rate and the speculative demand for money.

For any level of income, according to Figure 7-6, in the absence of price changes, changes in the money supply,  $M$ , are

reflected by falling interest rates causing an increasing speculative demand for money,  $L(r)$ . We can observe that, according to Figure 7-4, 7-5, and 7-6, if aggregate income were to increase, the transactions and precautionary demands for money would increase but, with a given money supply,  $M$ , would cause interest rates to rise according to the speculative demand for money. This is so because if aggregate income were to rise, greater transactions and precautionary balances would be required but they could be increased only by reductions in speculative hoards of money in the forms of idle bank balances. Accordingly, interest rates must rise to entice money out of speculative hoards. As shown in Figure 7-7, income,  $Y_2$ , higher than income,  $Y_1$ , is compatible with a higher interest rate than that for  $Y_1$ ; similarly  $Y_3$  is compatible with yet a higher interest rate.

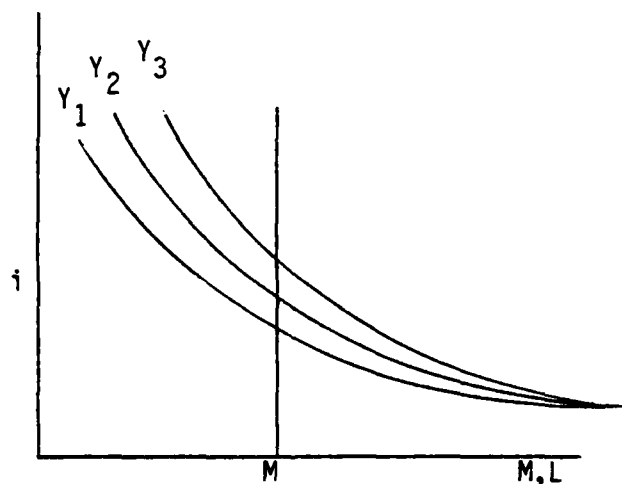


FIGURE 7-7. Interest rates and levels of income.

Thus, from the two figures, we can identify combinations of the interest rate and income at which the demand for and supply of

money would be in equilibrium with one another. Figure 7-8, depicting the L-M curve as created by Hicks, is nothing more than

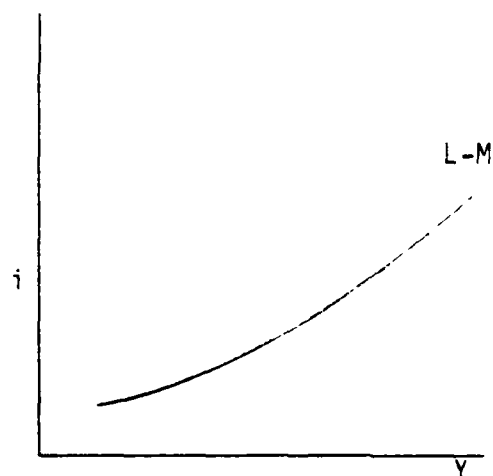


FIGURE 7-8. The L-M curve.

the locus of points of intersection of curves representing different levels of income  $Y_1, Y_2, Y_3, \dots$ , and the line representing a given supply of money,  $M$ , as shown in Figure 7-7.

Of course, the L-M curve will shift as the result of a change in the money supply. A decrease in  $M$  would cause the curve to shift leftward; and an increase would cause the curve to shift to the right. However, a complication arises that tends to damage the efficacy of our model, and that is that as the supply of money is increased, the money level of income will be shifted upward for any level of income existing at the time of the increase. This means that the rate of interest would not fall as predicted by the rightward shift in  $M$  in Figure 7-8, but in fact, could rise depending upon a number of factors, the discussion of which we delay until a later chapter.

We should also recognize that the transactions demand for money is affected by the interest rates as they become high relative to past rates or anticipated rates. This is partially a reflection of the adjustment consumers make between present consumption and future consumption in rationalizing the level of their utility. At the same time, the speculative demand for money can shift up or down subject to what holders of idle balances think should be the appropriate rate of interest in terms of the risk for holding any given amount of speculative balances at any particular time. At this juncture in our discussion, it is important for us to understand that in physical terms, out of income, consumption and investment result. Our monetary exchange system makes consumption and investment possible in terms of the money representing demand for consumption goods and the money representing the transformation of saving into investment demand. Any change in anticipations or the money supply will put into motion a chain of events that will result in a reallocation of money income among transactions and speculative balances and consumption and savings.

If, for example, speculative balance holders adjusted their expectations of future interest rate so that existing rates now appeared to be relatively higher, money would be released from speculative hoards as would-be saving; financial intermediaries would in turn offer the increased supply of loanable funds for investment at lower interest rates than before. The increased savings would thus be transformed into investment demand at lower interest rates. The increased investment would result in expanded

output and employment. Increased income would cause transactions demand for money to rise bringing about a new equilibrium among the determinant variables,  $S$ ,  $I$ ,  $L(i)$  and  $M$ , and the determinates,  $r$  and  $Y$ .

In this respect, let us emphasize that among all existing security and speculative money hoard holders, there would be an increased desire to exchange money hoards for securities. Naturally, the aggregate of money hoards and existing securities would not change, but with changed expectations as to future interest rates speculative balances would exceed that desired to be held at existing rates, making money available from speculative hoards for satisfying new investment demand as saving.

On the other hand, given the money supply, changed business expectations can cause a shift in investment demand by which interest rates, for example, would rise causing speculative hoards to be reduced. The reduction in speculative hoards in satisfying investment demand would eventually translate itself into increased income; as income expanded to higher levels, there would be a growing transactions demand for money, reducing further the amount available for speculative hoards, and causing interest rates to rise still further.

In this respect, Keynes isolated his concept of the demand for money much too unrealistically from financial intermediation as it exists in the industrial world. There is more than the choice between idle bank balances and long-terms bonds. A broad array of alternatives in financial assets confronts those who have money and

who make decisions as to what to do with it. The more strongly they think future interest rates will decline, the more disposed they are to hold long-term bonds; the more strongly they think interest rates will rise, the more disposed they are to hold idle bank balances. In other words, liquidity preferences are inversely related to current interest rates relative to what they are anticipated to be. Between long-term bonds and idle demand deposits, there is a range of maturities in financial assets the attractiveness of which depends upon the direction interest rates are thought to be heading.

If interest rates are thought to be relatively very low, idle demand deposits will increase in volume. If interest rates are thought to be relatively very high, idle balances will fall, as those with money or their financial intermediaries seek to take advantage of high yields and the potential for capital gain, and who choose those maturities in keeping with their expectations. Thus, idle demand deposits will rise if the expectation for rising interest rates is strong. Since the economy depends upon the financial intermediation system to effect the great bulk of its transactions, we can anticipate that the intermediaries themselves, acting as the economy's agents, reinforce the public's liquidity preferences by an increasing reluctance to transform deposits into interest-bearing assets.

Thus, the intermediation system itself under such circumstances contributes to a slowdown in the active use, or turnover of the money supply. This means that the part of realized income



the public sets aside as would-be saving when liquidity preferences are high is not all transformed into intended investment, but some part of it is idled by the intermediation system itself. Keynes, himself, did not say as much, but if the concept of the speculative demand for money, or liquidity preference, is to have any meaning at all in the context of the industrialized economy, it must be judged within the framework of an organized financial intermediation system.

In considering Keynes' concept within that framework, we must not forget that the exchange of money for other financial assets is part of the overall dynamic phenomenon of economic activity. That exchange is a continuous process, and at any chosen instant of time, some financial assets are maturing and others are being created, but those that do exist are each owned by some one individual or institution or firm. It is the relative preference among all interested parties for liquidity together with the given supply of money that determine one point of the L curve. If the supply of money were to change with liquidity preferences remaining the same, another point of the L curve would be determined. On the other hand, if liquidity preference were to change, it would cause a shift in the L curve. We have seen how the L-M curve is precipitated for varying levels of output with a given money supply and a given demand for money schedule. We have also seen how the I-S curve is precipitated.

Before we consider what is referred to as the monetarist point of view, let us examine how in the Keynesian world the L-S

curve and the L-M curve determine the interest rate and level of output.

In this connection, we can bring together the I-S and L-M curves of Figures 7-3 and 7-8 in one graph as in Figure 7-8 with which we are then in a position to analyze more coherently the impact of changes in  $S$ ,  $I$ ,  $L(r)$  and the money supply of  $Y$ .

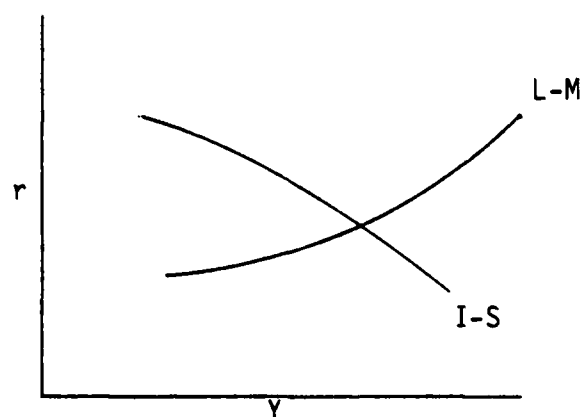


FIGURE 7-9. The L-M and I-S curve and equilibrium levels of the interest rate,  $r$ , and income,  $Y$ .

We observe from Figure 7-9, that the L-M curve has an elasticity which varies with changing income. The speculative demand for money according to Keynes tends to become increasingly elastic with falling levels of output and income. Increasing elasticity might be the result of a chain reaction that would take place, say, if intended investment were to shift downward causing interest rates to fall which in turn would cause speculative balances to rise. Rising speculative balances would mean lower aggregate demand and employment bringing about further reductions in intended investment and the interest rate. Thus, in the U.S.,

expansions of the money supply brought about by increased Federal Reserve purchases of existing federal debt would have no effect on income or interest rates since holders of debt would be willing to exchange it for Federal Reserve checks. They would add those checks to existing speculative balances instead of seeking other opportunities for their increased hoards.

At increasingly higher levels of income, the curvature of the L-M curve simply reflects, for a given money supply, the growing incursion that the growing transactions demand for money is making on speculative hoards, that incursion being possible only at higher and higher interest rates. The flow of money into idle bank balances lessens relative to the outflow into investment.

In all of what has been said in the last two paragraphs lies one of the crucial distinctions between the Keynesian view and the monetarist view of output, income, employment and interest rates. The income velocity of money is defined as the rate at which the money supply turns over to permit the transactions related to the aggregate demand for output. Thus, for example, in some year for a \$300 billion money supply with no idle balances and a \$1500 billion marketed output, the money supply would have turned over five times. But, suppose that idle balances were increased by \$25 billion, by virtue of a change in liquidity preference; the result at given prices would be \$1375 billion marketed output or a money supply turnover of approximately 4.6. That is, the income velocity of money would have slowed down; the net effect of the increased idle balances would have been a fall in output and

consequently employment. The variability and instability of the income velocity of money is a crucial aspect of the Keynesian theory. The monetarists on the other hand regard velocity as being a relatively stable function.

#### 4. The Monetarist View

Although we have emphasized the vulnerability of the industrialized economy to disruptions brought about by differences in demand for produced output and realized income generated by that output, the monetarist school of thought in economics, while recognizing the existence of business cycle undulations, emphasizes the self-correcting nature of the economy. That school incorporates the view that the speculative demand for money is a rather subdued phenomenon and that the income velocity of money is a stable function. The monetarists believe changes in the money supply are of paramount importance in precipitating short-run changes in output, income and employment, and relate this belief to the further one that supply and demand forces work their effect on interest rates and prices in such a way that the economy limits rather narrowly its excursions from its long-term growth path determined by investment, technology, the labor force and its natural resources.<sup>4</sup> Most importantly, for our purposes in this

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<sup>4</sup>Milton Friedman is perhaps the most prominent of the monetarists whose approach to macroeconomics theory stems from his, "The Quantity Theory of Money: A Restatement" in Friedman, M., ed., Studies in the Quantity Theory of Money, Chicago: University of Chicago Press, 1956.

chapter, it is well to understand that the monetarists all but ignore the possibility of a speculative demand for money in the Keynesian sense that limits the impact of money supply changes on demand for output.

Monetarism is also referred to as the modern quantity theory, its essence being more or less embodied in the classical equation of exchange

$$MV = PT$$

which states that the money supply multiplied by its velocity is equal to the number of transactions occurring in say the year times the price level, that is the value of annual output. We can express the equation as

$$MV = Y$$

or

$$M = \frac{1}{V} Y$$

Accordingly, if velocity is stable and over the short run a constant, any change in the money supply causes a change in nominal output. The latter change can occur in terms of real output, in terms of a price level change or a combination of the two. According to monetarists, the change occurs because of the impact money supply changes initially have on interest rates, and on the prices of bonds and other financial assets, and the eventual effect that resultingly occurs in investment and consumer demand.

In the modern quantity theory, the economy decides on the amount of money it needs as a medium of exchange and adjusts its money balances accordingly. In the face of an increase in the money supply by the monetary authority, the public finds itself with larger balances than it wants to hold, consequently it seeks out bonds and other higher interest-bearing assets to exchange for its excess balances. The action causes interest rates to decline as security prices rise. In turn, with lower interest rates, new investment is encouraged and so demand for capital as well as for consumption goods increases.

In this respect, the monetarists are describing a process through which encouraged investment manifests itself in the financial markets by an increased volume of security offerings and a simultaneous transformation of the proceeds into demand for capital goods. We will soon see the role bank credit may play in this process. Thus, in times of encouraged investment, there is a stepped-up flow of new securities into the financial marketplace which merges into the day-to-day trading of financial assets among individuals, institutions and other participants.

At less than full employment, the economy experiences rising employment as producing firms respond to increasing demand. Were the economy to be at full employment, demand for output that cannot be increased forces prices up. Alternatively, a decrease in the money supply motivates the public to repair its depleted money balances which brings down the demand for interest-bearing bonds and other financial assets causing interest rates to rise. In

turn, investment and consumption are discouraged, but with flexible prices, the economy adjusts to the new reality and as prices fall, output and employment are preserved.

Thus, in deemphasizing the existence of a speculative demand for money, monetarists focus on what they believe is a stable relationship between the money supply and stated output, and more or less set the Hicksian I-S, L-M apparatus aside. Instead, according to the classical equation of exchange, they relate output and income to the transactions demand for money as shown in Figure 7-10. That relationship being a stable one, changes in the money supply precipitate changes in stated output through the process just described.

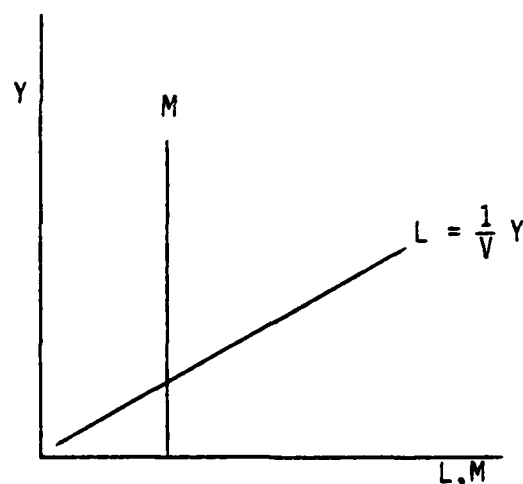


FIGURE 7-10. Monetarist demand for money.

In summing up our observations of Keynesian and Monetarist thought, we reach the conclusion that in the Keynesian scheme, demand for output of goods and services is affected by changes in the demand for money. On the other hand, monetarists insist that

the demand for money is a stable function of output of good and services, and it is the money supply and changes thereto which determined nominal value of output.

In assessing those two opposing views, let us remark that in the financial markets there are swings in liquidity sentiment among those who set aside some of realized income as is readily confirmed by the historical record of interest rates. An increase in liquidity preference draws money away from bonds and raises interest rates in the long-term end of the financial market, and in general will ease rates in short-term securities. Depending upon the state of liquidity preference, changes in the money supply may or may not have the effect predicted by the modern quantity theory. Investing firms do not readily change from long-term borrowing to short-term borrowing or from ownership expansion to borrowing in financing capital expansion. Thus, it seems reasonable to think that both the demand for money and the money supply enter into determining what the level of output, employment and income will be. We will return to a further examination of the demand for money and the saving-investment process in our discussion of government intervention through monetary policy and fiscal policy.

#### 5. Changes in the Price Level

Although we discussed the need for indexes in Chapter 5, we have since then more or less ignored price level considerations. Before closing this chapter, it may be appropriate for us to make a final observation on what is seen as the impact that a changing price level could have on the level of interest rates and the level



of national income. With good reason, Keynesian theory emphasizes the downward rigidity of prices in the industrial economy; nevertheless, the general price level conceivably could fall. In this respect, reconciliation of sorts involving neoclassical microeconomic theory and Keynesian doctrine has precipitated two views on the efficacy of price flexibility in assuring full employment.<sup>5</sup>

As might be expected, an interpretation of the Keynesian view is that a changed price level in effect changes the real money supply. Thus, if the price level were to fall in a recessionary trend, the real money supply would increase and thereby, if the L-M curve were not completely elastic, cause interest rates to fall, motivating increased investment. The Keynes effect, as it is called, differs from what is referred to as the Pigou effect, which is the change in real money balances and other forms of wealth caused by price level changes.<sup>6</sup> Accordingly, a fall in the price level provoked by a general wage reduction would encourage higher employment through greater consumption motivated by increased real balances of the economy. Not only would money buy more, but with increased real wealth, consumers would be disposed to save less. This would shift the I-S curve to the right bringing about a higher level of income at a higher interest rate structure.

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<sup>5</sup>The reconciliation is attributable to Paul Samuelson and others who combine the purely competitive model with the precepts of Keynesian economics.

<sup>6</sup>The Pigou effect takes its name from A. C. Pigou, a British economist, whose writings emphasized the role of real balance and wealth changes in determining employment levels.

Quite naturally, a rise in the price level would cause the Keynes effect and Pigou effect to act in reverse. In essence, the two effects are alternative ways to consider the impact that a change in the price level would have on income and employment, and there is realistically some of both in the change that may take place. After all, as we will see, transaction balances, whatever form they may take, are the money supply. According to the interpretation of Keynes, unneeded balances created by a price drop would be soaked up by increased investment; according to Pigou, new purchasing power so created would be used for increased consumer spending. Whatever the view, the nominal money supply must be considered in terms of the price level. We have studied the technique of price indexing and in the chapters ahead we should think of shifts in the I-S and L-M curves in terms of real values.

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## Recapitulation on Differing Views of Reality

### 1. The World of Classical Economics

In earlier chapters, we have referred rather obliquely to the tenets of classical economics as exemplified under various banners such as the quantity theory and latter-day monetarism. We may have been remiss in not pausing earlier to consider those tenets somewhat more directly; accordingly, somewhat belatedly this seems to be a good place to recapitulate more explicitly what their distinguishing features are. What is called classical theory results from the elaborative efforts of many economists. The fundamental embodiment of classical theory may be found in the writings of David Ricardo, John Stuart Mill and Alfred Marshall, three English economists whose works range from the early part of the last century to the early part of this century. For our purposes, we draw on the excellent summary of the theory in the text, Income, Employment and Economic Growth, by W. C. Peterson.

Classical theory as applied to the circular flow of an economy is in essence the generalization of microeconomic principles in which optimization in effort by the individual, and maximization of profit by the firm are paramount. This of course, as we have seen, is not incompatible with Keynesian economics nor for that matter with the realities of the industrial world.

Where application of classical theory to the industrial economy goes awry is in its assumption of the flexibility of wages

and prices and of the efficacy of changes of those two variables in maintaining full employment. Classical theory further departs from reality in ignoring the differences which may and do exist between income set aside as saving and intended investment, and in assuming that the turnover in the money supply is for all intents and purposes a constant.

A crucial aspect of classical theory is that the demand for labor by producing firms is intimately related to its marginal revenue product, and that the supply of labor reflects the utility preferences of individuals making up the labor force. Furthermore, it is assumed that myriads of firms comprise the productive capacity of an economy and that individuals in the labor market act independently of one another. Thus, the equilibrium level of employment and wages is determined by the intersection of the labor demand and supply curves. Since both the product and the labor markets determine for the individual firm and employed person what equilibrium product prices and wages are to be, flexibility of the two is guaranteed. Accordingly, employment is always full in the sense that those in the labor force who are employed are those who are willing to work at the market wage. Given the aggregate production function with existing technology, total output is determined.

In the classical scheme, the idea of price flexibility is carried into the supply of and demand for investment funds. Saving is looked upon not as a function of income but as a function of the interest rate; the higher the rate of interest, the greater is

saving. Thus, the supply of money for investment in capital depends upon the rate of interest or, in other words, the price of money. The demand for capital financing depends upon the marginal return from investment. Naturally, the greater the expected return the greater is the demand. The equilibrium value of the interest rate and the amount of money out of income involved in the saving-investment process are determined by the intersection of the two functions, demand for and supply of money. Since no one entity, saver or investor, can by itself exert an influence on market conditions, flexibility of interest rates and equality of supply and demand is assured. An assured equality means that income generated from production is in fact all fed back into the stream of demand for what has been produced. In the next chapter, we will inquire further into the disposition of saving in the classical context.

The fundamental justification for an equality between supply and demand in the classical scheme is what is referred to as Say's Law, which states in effect that the one who takes goods to market does so in anticipation of exchange for other goods.<sup>1</sup> Supply creates its own demand, and, of course, those who supply goods and services to the market are encouraged to do so by what they know of market conditions.

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<sup>1</sup>Say's Law is named for J. B. Say, an early nineteenth century French economist. Some of his writings are translated into english in Letters to Mr. Malthus (transl. John Richter, 1821) and A Treatise on Political Economy (transl. C. C. Biddle, 1880), Fairfield NJ: A. M. Kelley, 1976.

## 2. Survival of Classical Theory

The classical tradition was not disintegrated by the publication of Keynes' general theory, but lay in the back waters of macroeconomic thought for some years thereafter. In this respect, classical theory and Keynes' theory are not wholly contradictory. But it is the assumptions of classical theory which proved its undoing, temporarily at least, in its use to predict outcomes in terms of output, employment, income and interest rates.

Clearly, the classical assumption of price and wage flexibility is inapplicable to the industrial economy, dominated as it is by large firms and strongly influenced by organized labor. Furthermore, the implication in classical theory that price and wage flexibility assures full employment does not recognize the disparity which can and seemingly always does exist between saving and intended investment. While it is conceivable that a flexibility in interest rates could resolve the problem arising from a disparity between saving and intended investment, experience indicates that saving is not exclusively a function of the interest rate but is associated with income as Keynes proposed. At the same time, there is evidence that intended investment responds only partially to interest rate changes, being affected by product demand as well as the capital-to-output ratio. Thus, the equilibrating interest rate for saving and intended investment as Keynes pointed out, could be a negative one. It is the melange of all the variables in the circular flow that determines what the balance or

imbalance of leakages and injections is to be at any one moment in time, and accordingly in which direction output, employment and income are headed.

In the classical scheme, the only reason unemployment could exist would be an unwillingness on the part of the unemployed to work for the going market wage rate. It being highly unlikely that individuals in the labor force would willingly go unemployed for very long, full employment equilibrium is the rule. In Keynes' theory, an excess of saving over intended investment would drive an economy downward until a new equilibrium were reached at increased unemployment with the individual thrown out of work being helplessly carried along by events. Any reduction in the wage level to meet product demand pressures would come to naught, since demand is generated for the most part by the wages that are paid out to the labor force. Consequently as income were reduced so would be demand. Keynes' view suggests that a spiral of falling prices and wages could lead to catastrophe.<sup>2</sup>

### 3. Views on Efficacy of Policy

Anticipating a further discussion of fiscal policy and monetary policy in Chapters 12 and 14, let us now touch briefly on how theory weighs the effectiveness of government intervention. We brought out in Chapter 2 that since the Great Depression of the 1930's, our federal government and the central governments of other

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<sup>2</sup>Keynes, op. cit., pp. 257-271.



industrial economies have altered the role they play in economic affairs, strongly influenced, no doubt, by the sweeping implications of Keynesian doctrine.

The economic policy-making apparatus of our federal government is dominated by considerations of compensatory finance and monetary market conditions. We have observed in this text that demand for output in the industrial economy periodically may fall short of what has been produced, causing the economy to go into a tailspin of sorts until a new equilibrium is reached where the two, demand and supply, are in balance. Obviously, a central government would seek to forestall or avoid such a circumstance. We also are aware that demand may exceed what has been produced and thus cause prices and wages to rise. One may anticipate that government would seek to constrain demand under high employment equilibrium to preclude inflationary changes in prices and wages.

In dealing first with the economy in equilibrium at depressed levels of output or in a recessionary trend moving to a new equilibrium, we might ask how the government can compensate for such conditions. One answer is that it could deliberately increase its expenditures so that aggregate demand would exceed what was being produced and thereby break the economy loose from its depressed state equilibrium or reverse its downward movement. This suggestion immediately raises the question of how the expenditures would be financed. The government could borrow money from the private economy or it could raise taxes to meet the new level of expenditures. If it were to run a deficit and borrow money to

finance its enhanced spending, it would add to total demand for borrowed funds, and clearly with a given money supply, put upward pressure on interest rates.

Some monetarists say that some private investment would very quickly be "crowded out" of the market, displaced by the increase in government spending. Others observe that higher interest rates would encourage a higher turnover in the money supply and permit government spending to work a beneficial effect on the economy for a while. But as a result of price and wage rises put into motion by increased demand and expectations of further rises, the economy would soon slow down and recede to the level from which it first responded to increased government spending. Thus in the eyes of monetarists fiscal policy ministrations to a depressed economy have only a short-run effect. To the monetarists, increases in government spending must be accompanied by increases in the money supply. In fact, monetarists say that fiscal policy prescriptions are not necessary at all, and that increased demand for output can be achieved by money supply increases alone.

In the face of money supply increases, the private economy would find itself with more money on hand than its transactions needs called for--its real balances would exceed its needs. Consequently, seeking uses for its extra money, it would bid up the prices of bonds and other financial assets as well as real assets. The result would be lower interest rates and higher price-earnings ratios on corporate stocks, encouraging simultaneously increased

intended investment and consumer expenditures, the latter in reaction to enhanced perceptions of wealth among the public at large. In the absence of countervailing forces, the monetarists would predict a sustained higher level of employment and output.

Keynes and early adherents to his theory played down the importance of money in compensatory finance. According to Keynesian doctrine, increased government expenditures made at a time when the elasticity in the demand for money were extreme would have little impact on interest rates, primarily because idle money balances would be high and the increased need by the central government for borrowed money could be accommodated by only a slight increase in interest rates. Accordingly, private investment would hardly be affected, and so with a given money supply the beneficial effect of increased government expenditures could be of a lasting character. Thus, increases in the money supply need not be made. As a matter of fact, in this view, money supply increases would have little if any effect if the demand for money were elastic since hardly any lowering of interest rates could be achieved in Keynes' famous liquidity trap. And Keynesians would say if monetary policy were to be effective, intended investment would have to be interest-elastic and interest rates would have to fall in the face of an increase in the money supply. More recently, Keynesians have modified their view and tend now to recognize the need for money supply increases to accommodate increased government spending and also recognize that such increases can and do affect interest rates. Both camps would

agree, too, that increases in the money supply outstripping the rate at which the economy could expand its output would soon put upward pressure on interest rates as the economy observed prices and wages that were rising and which they would expect to rise even more.

We observe, then, that the emphasis for economic policy is different between monetarists and Keynesians. The former deny the efficacy of fiscal policy measures for a depressed economy and instead advocate monetary policy changes. The more extreme monetarist view as we will see, is that discretionary monetary policy changes are as unnecessary and thwarting as fiscal policy changes, and recommend instead a steady rate of growth in the money supply compatible with the growth in the economy's productive capacity.<sup>3</sup>

As we remarked at the beginning of this section, government expenditure increases alternatively can be financed by increased taxes. Monetarists not being advocates of fiscal policy measures to begin with, are even less disposed towards them financed by taxes. One can readily agree that the only equilibrium level compatible with increased government spending financed by taxes would be that existing at the time the change was initiated since any increase in national income would precipitate increases in taxes exceeding the level of spending. Keynesians have no quarrel with that view.

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<sup>3</sup>Friedman, M., "The Role of Monetary Policy," American Economic Review, March 1968 & A Program for Monetary Stability, New York: Fordham U. Press, 1959.

Do expectations change and do they affect the response of the economy to fiscal and monetary policy changes?

#### 4. Rational Expectations

A further development of thought along classical lines is embodied in rational expectations theory. As developed by R. E. Lucas, R. J. Barro and others.<sup>4</sup> In essence, rational expectations postulates that there is continuous market clearing by virtue of all agents acting rationally in the basis of complete knowledge. According to this theory, macroeconomic policy changes cannot even in the short run alter the intended direction of an economy whatever it might be. And since there is moment to moment adjustment in marketplaces, the labor force is fully employed at all times. The swift adjustment to changes in supply and demand wrought by economic policy makes it highly unlikely that the result sought by the change can be realized. And according to this viewpoint since market clearing is of a continuous nature, there is no need for compensatory policy changes anyway.

How applicable rational expectations is to actuality is another matter. No one would agree that output, employment and income do not vary considerably from what otherwise would be an

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<sup>4</sup>Rational expectations theory is not easy to comprehend. Among a number of writings on the subject are Barro, R. J., "Rational Expectations and the Role of Monetary Policy," J. Monetary Economics, 2, 1976: 1-32; Lucas, R. E. & Sargent, T. J., Rational Expectations and Econometric Practice, Minneapolis: U. of Minnesota Press, 1981; Fischer, S., "Long-Term Contracts, Rational Expectations and the Optimal Money Supply Rule," J. Political Economy, 197, 191-205; and Fischer, S., ed., Rational Expectations and Economic Policy, Chicago: U. of Chicago Press, 1980.

analytically predictable curve. Rational expectationalists resolve the discrepancy between theory and reality in terms of unexpected or unanticipated occurrences which catch the economy by surprise and thus precipitate changes in employment and output that otherwise could not occur. Accordingly, a sudden change in fiscal policy, say an increase in spending not previously announced, could generate significant changes in output before the economy, caught flat-footed so to speak, could gather itself and modify its expectations to new realities. However, that explanation does not seem to be compatible with economic fluctuations of the past. If in fact there was a sufficiency in the flexibility of prices and wages for continuous market clearing, an economy would hardly go through the throes of the business cycle as industrial economies so obviously do.

Rational expectations simply ascribes to an economy an inherence to absorb and digest knowledge much in excess of what it possibly could have. At the same time it seems to ignore the somewhat ponderous nature of the industrial economy that comes from the long-term nature of some contracts, and the clearly evident specificity and relative immobility of capital and labor. Even if knowledge were quickly assimilated by the public at large, the adjustment from reaction to anticipated change would still be time consuming much in the manner in which the flight of an aircraft is modified by movement of control surfaces.

## 5. Supply-Side Economics

Yet another off-shoot of classical theory is the concept of supply-side economics.<sup>5</sup> Much of the impetus for this theory came from the seeming failure of Keynesian economics to deal with the economic problems of the 1970's. Supply-side economics is based on the assumption that the labor force of an economy is responsive to changes in take-home income. Thus, if taxes are reduced, the resultant increase in after-tax income encourages greater expenditure of effort since individuals now are assured of greater rewards for their efforts. In short order, the loss of tax revenue by virtue of the tax cut is recovered from the greater income that is realized. Since reduced taxes mean increasing saving, interest rates are modified to the benefit of intended investment.

Supply-side economics is thus at odds with Keynesian economics in denying that the problem of the industrial economy is one of recurring deficiency of demand. It instead emphasizes that government intervention to compensate for the supposed deficiency causes an excess demand created by deficit financing. The demand in excess of what the economy is producing in turn forces prices and wages up, setting off a spiraling inflation which comes to a halt only when fiscal and monetary policies are reversed. Since

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<sup>5</sup>For an expanded view on this subject, see Canto, V., et al, Foundations of Supply-Side Economics, Theory & Evidence, New York: Academic Press, 1982.

the consequence of halting inflation is a painful increase in unemployment, supply-side economics recommends avoiding Keynesian-type intervention in the first place.

The supply-side view thus emphasizes the impact that material reward has on human behavior. Reduction of taxes and government expenditures opens the way for an economy to follow its own lead out of trouble. A responsive labor force will intensify its efforts when assured of keeping more of what it earns. At the same time, the increased amount of saving will finance a greater investment which in turn adds to the productivity of the economy. In the neoclassical sense, the increased saving rate in and of itself will not result in a greater economic growth rate, but the prospect of improved technology from enhanced investment if realized will bring about an improved rate of growth.

To what degree the labor force is responsive to tax cuts is uncertain, but it is not unreasonable that increased effort would result from greater take home pay. On the other hand, some studies have shown that the tradeoff between leisure and work are such that greater pay per unit of effort could result in a lesser expenditure of labor.

Supply-side economics also tends to imply that the labor force and producing firms ignore or are oblivious of the goods and services that any level of taxes provide. Is that implication perhaps too much of an exaggeration? The public at large may very well realize that a cut in taxes means a reduction in some good or service government offers. That is, the public at large may very



well understand that pretax income represents purchasing power in terms of public goods and services it has chosen through political representation as well as private goods and services it exercises discretion over with its after-tax income. If that is the case, then the public would feel no more rewarded for its efforts by increased after-tax cuts, realizing full well that it would be losing goods and services otherwise available. Accordingly, from its larger after-tax income, it would make allowances to provide for them by other means. It is that aspect of human rationality that puts the efficacy of supply-side policy in jeopardy.

From our discussion of divergent macroeconomic theories, we come away with these gleanings. Keynesian theory is oriented towards the short term, yet if in fact fiscal policy and for that matter monetary policy are to achieve the desired impact on the economy, that impact will run its course only over a very long time. Keynesian theory emphasizes the disparities that are precipitated from time to time between intended investment and saving, and denies that interest rate changes can act sufficiently quickly as an equilibrating device to hold supply and aggregate demand in high employment equilibrium. It most definitely denies the efficacy of wage reductions in maintaining full employment, because in its view wage reductions precipitate price reductions as the producing sector of the economy faces a lessened demand for output. So it can go into a spiral of reductions ending with the economy on its knees. To the Keynesian, deficiency in demand is the problem that industrial economy recurringly faces, and the best instrument the government has at hand to deal with it is deficit spending.

Such an approach is near anathema to the modern day classicists who see in the industrial economy a crucial, self-correcting nature emanating from the flexibility in wages and prices, and interest rates; the former assuring a means for full utilization of the labor force, the latter assuring full use for investment purposes of saving. In this respect, classicists, faced with the undeniable undulations of the business cycle, may concede the short-run effectiveness of fiscal and monetary policy changes, but insist that there can be no long-run impact on the economy from policy changes. Rational expectationalists will not even concede short-run effects of anticipated policy changes. Those who focus on supply-side economics emphasize the discouraging impact of taxes on private enterprise, predicting that there is a point in tax rates beyond which further rate increases will result in falling total revenue as the result of lessened productive effort.

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## THE MONETARY EXCHANGE SYSTEM

1. Money and Commercial Banks

The circular flow of goods and services in an industrialized, mixed enterprise economy is made possible by a monetary and financial intermediation system at the core of which lies a commercial banking system in one guise or another. In our own country, the financial intermediation system provides the economy with credit as part of a money supply that is the medium by which goods and services are exchanged among individuals, firms and government. The money supply, M-1, as commonly referred to is comprised of demand deposits (checking accounts) in banks and other financial intermediaries, and currency in circulation. Demand deposits at any one time reflect the credit that the banking system has made available to the economy. They are drawn upon in the form of checks to effect the exchange of goods and services. Consequently, they are part of the money supply needed by an economy in its everyday activities.

United States currency, for the most part, is made up of metal coins and paper notes. The coins are obligations of the United States Treasury and the paper money is issued by the Federal Reserve System which controls our financial intermediation system. We will have more to say about currency and the Federal Reserve

System later in this chapter. Expanded versions of the money supply include savings deposits and certain other time deposits.<sup>1</sup> The popular version of the money supply of the United States at the end of 1978 amounted to \$361 billion of which \$264 billion was in commercial bank demand deposits and \$98 billion was in paper money and coins circulating in the hands of the public.

The commercial banking system of the United States is an admixture of federally chartered banks and state chartered banks. There is a total of about 14,650 commercial banks, but some 72 percent of their \$1,290 billion in assets is held by the 4,725 federally chartered banks.

The commercial banks underpin our monetary exchange and financial intermediation system because for the most part the money, either in the form of checks or currency, involved in transactions comes from a bank and eventually finds its way back to a bank. To be sure, money used in some transactions may but rarely work its way back into the banking system, but the bulk of all monetary transactions is nothing more than shifts in the balances of commercial bank demand and time deposits. The remainder of transactions is based on the exchange of nonbank checks and of currency. In conformance with the Financial Institution Deregulation and Monetary Control Act of 1980, the distinction

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<sup>1</sup>One expanded version, referred to as M-2, also includes small time certificates of deposit, money market deposit accounts and balances of money market mutual funds.

between commercial banks and other intermediaries has been dramatically reduced in the last few years with the result that the latter play a more prominent role in accommodating day-to-day transactions of the economy.

As most wages and salaries are paid, the bank balances of those earning the money are increased while the balances of producing firms paying wages and salaries are reduced. When earned income is spent for the output of goods and services, the balances of those spending it are reduced while the balances of those selling goods and services are increased. Even currency in circulation tends to flow out from and into the banks as much of that form of money is deposited in demand and time deposits and then withdrawn.

Shifts in bank balances and those of other intermediaries, of course, also take place as the result of trading among individuals, nonfinancial institutions, nonbank financial institutions and government in bonds, equities and various financial obligations representing real assets or promises to pay. By the same token, typically, when money is transferred from nonbank lenders to borrowers, the bank balances of those lending money are diminished while the bank balances of those borrowing money are increased. Naturally, the balances of the borrowers eventually are depleted as they spend money on the purposes for which borrowed, and so it goes.

Economic activity in these respects, then, is truly circular in nature, and the commercial banking system is a principal

channel through which the movement of goods and services is facilitated. When goods and services change hands so does money. Banks, as we have already suggested and as we will see in more detail later, are also crucial because of the role they play in satisfying the short and long-term credit needs of the economy.

The total money supply "turns over" a number of times each year in the transactions representing all the work going into output of Gross National Product and its distribution. The money supply, so to speak, generally works its way out of and back into the banking system several times as output is produced and income is realized, and as demand for produced output is translated into expenditures for goods and services. In this respect, it is almost inconceivable that all transactions would take place at once thereby requiring a money supply equal to the value of Gross National Product. As a matter of fact, the transactions leading up to the totality of final goods and services are taking place incessantly; and in each step along the way as value is added to what eventually will become final product, money changes hands and shifts take place in bank account balances and those of the other intermediaries. The rate at which the money supply turns over with respect to those transactions is referred to as the transactions velocity of money and in 1978 was approximately 23. On the other hand, the rate at which the money supply turns over with respect to finished goods and services is referred to as the income velocity of money. In the United States in 1978, for an economy with a Gross National Product of \$2,108 billion, the income velocity of money was about 6.

As we know from the previous chapter, according to Keynesian theory the velocity of money in the short term fluctuates because the demand for money as a store of value changes. As speculative motives undergo adjustment, the velocity of money slows down or speeds up as producing firms and the general public attempt to increase their idle bank balances or attempt to decrease them. We also saw in the last chapter that in the Keynesian schema the changing velocity of money lies at the heart of the problem with respect to employment and output. When the velocity of money slows down, or what is the same thing, when idle money balances increase, output and employment will fall. When the velocity of money speeds up or idle balances are activated with a given money supply, if the economy is at less than full employment, output and employment with but rare exception will increase. But increasing velocity at full employment will result in rising prices and wages only, since the economy can expand its output but very little in the short run. Thus, we can see that undulations in the velocity of money must be one element in the relationship of the money supply and economic activity.

## 2. Financial Intermediation and Credit

The other element in that relationship is undulations in credit necessary to satisfy fluctuating activity of an economy as it moves along a secular growth path. If there were no seasonal variations in agricultural and industrial activity, if everything were produced at a constant rate and were consumed at a constant rate, if population were static, if there were no technological



improvements; a fixed money supply and a given amount of credit would serve the monetary needs of an economy. But as the money supply is turning over in the short term in its role as the medium of exchange, in an industrialized economy, it must also be growing in the long term to reflect the investment and resultant increasing productive capability and activity of the economy.

Remember that in an industrialized, mixed enterprise economy, ongoing saving-investment is taking place which results in expanded output. Given that prices and wages typically do not fall, to accommodate that expanded output, the money supply by way of expanding credit must be increased if unwanted undulations in output and employment are to be avoided. That is not to say that undulations in output and employment will not occur anyway. And as was suggested in the last chapter, undulations that do take place in the economy tend by themselves to precipitate the need for a money supply growing more rapidly than real output. Thus, while the banking system is responding to the fluctuation short-term credit needs of the economy, it must also act as the conduit through which the monetary authority feeds permanent incremental increases in the money supply into the circular flow of the economy.

In this respect, the financial intermediation system of the U.S. is said to have the power to create or destroy money. Basically this is true. Banks as a system can expand the money supply by increasing usable credit. A bank loan sets off a chain of increases in demand deposits throughout the banking system.

Those demand deposits are part of the money supply. But, banks and other intermediaries can also reduce the money supply by not replacing maturing loans. In the absence of replacement, maturing loans initiate a chain of reductions in demand deposit balances throughout the intermediation system. In general, if the system just replaces maturing loans with new loans, other things being equal, the money supply will remain the same.

The intermediation system expands credit on the potential ability of borrowers to repay out of future income. The money supply partially reflects the amount of credit the system has made available to the economy at any one time. But the money supply also reflects, in part, the change in real wealth that technology advances have made possible, just as it also reflects the redistribution of income that past changes in the money supply relative to output have caused. We shall have more to say on this subject later in the text.

How, then, do financial institutions have the power to make loans and create money? Intermediaries in the United States operate on a fractional reserve basis. That is, they must maintain legally defined reserves as a percentage of their total deposits to ensure their ability to meet probable demands for payment on checks drawn against them. The legally defined reserves are a combination of cash on hand and assets immediately convertible into cash. Banks long ago found that of the total amount of deposits any one bank holds at any one time only a small fraction might be subject to withdrawal. Consequently, they found it financially sound and

profitable to loan the bulk of deposits each held to those seeking credit at interest rates that more than covered their cost of operations. Over the years, the fraction of total deposits held as reserves came to be regulated by the federal and state governments. Thus, we can see, if at some particular time an individual bank realizes a deposit of money in the form of a check not drawn on itself or in cash, it can set aside a fraction of it as a reserve, and loan out the remainder.

In the United States, transactions are carried out by intermediaries under the direct control of our monetary authority, the Board of Governors of the Federal Reserve System. They are limited in the extent of their credit operations by the Federal Reserve, and as we shall see the Federal Reserve varies their ability to offer credit by operating on their reserves in three principal ways. To reiterate, as saving and investment take place, an economy will grow and as it grows there will be a need for more money to carry out an increased number of transactions at higher levels of expenditure, a reflection of increasing increments of output as returns for invested capital and the increased productivity of labor. That need for money is manifested by an increased demand for credit. At any particular time, the intermediation system responds by supplying credit within its capacity to do so; that capacity is contingent on the reserves the monetary authority provides the system. Firms and individuals ask financial institutions for credit; the banks and other intermediaries make credit available by increasing demand deposits. Those demand deposit

increases are then put into circulation as transactions are carried out. A multiple expansion of credit concurrently takes place as the amount of an originally increased demand deposit works its way in and out of the system in the form of expanded reserves and then expanded credit.

We will see later just how changes in the total reserves of the intermediation system originate. At this point let us just assume that somehow the assets and liabilities of one bank are increased from outside the system. If the bank before the increase just met its legal reserve requirements, it would now have the capability to make additional loans to the extent of the increased amount of its assets less that fraction representing what it would have to maintain as a reserve on its additional loans. Thus, if the amount of the increased reserves were \$100 and its required reserve were 10% of demand deposits, it could loan \$90, keeping \$10 as the reserve against the increased liability.

The borrower would almost certainly draw down the \$90 loan by using the money for the purpose for which borrowed. The bank would have made the loan in the form of a demand deposit or cash. However the loan were made, in accommodation of a business transaction, it would probably work its way to some other bank or nonbank intermediary which would then find itself with additional demand deposit liabilities and assets of \$90. Much like the first bank, it would set aside the required 10% or \$9 as a reserve and then lend the remainder. The \$81 loan would find its way to another intermediary and so it would go. If the original \$100 worked its

way successively from one to another and if each in turn expanded credit to the limit of its required reserves, the economy would experience an expansion of credit according to:

$$E = \frac{100}{.10} = \$1,000$$

Thus, a multiple expansion of the original increase in one bank's reserve would take place through a chain of successive loans, and the money supply would be increased by the amount of the expansion. Accordingly, so long as the expansion of credit did not exceed the ability of the economy to expand its physical output, the increased credit could facilitate the expansion of output without greatly inflating prices and wages. The reader should understand that the full expansion of the money supply by the predicted multiple of some added amount of reserves would actually take forever. In fact from time to time, multiple expansions of bank credit have been nipped in the bud, and usually our monetary authority has had something to do with it. But following an addition to their reserves, it is conceivable that intermediaries could carry out over a long period of time very nearly all the possible increase in credit. It is easy to calculate that after only six successive increases in credit on the basis of the original increase in reserves, more than half of the full expansion in the above example would have taken place.

### 3. Saving, Investment and Intermediation

The primary purpose of an intermediation system, then, is to provide credit to a fluctuating and growing economy. It

focuses on liquid, short-term opportunities. But the banks in the system fall short of satisfying completely the financial intermediation needs of the industrialized, mixed enterprise economy. This is because as now constituted the commercial banking system cannot by itself effect the translation of money set aside as would-be saving into investment. This can be seen if we visualize the banking system as one big bank holding all deposits of the economy. Immediately after distribution of income from a production cycle the bank's balance sheet might look like:

<u>ASSETS</u>	<u>LIABILITIES</u>
\$100 cash	\$100 demand deposits of producers
\$400 loans	\$400 demand deposits of wage earners

If individual wage earners were now to set aside \$50 in savings accounts, the bank's balance sheet would now be:

<u>ASSETS</u>	<u>LIABILITIES</u>
\$100 cash	\$100 demand deposits of producers
\$400 loans	\$350 demand deposits of wage earners
	\$ 50 savings deposits of wage earners

Thus, no real saving has actually been effected; all that apparently has taken place is a shuffling of bank accounts. This

seemingly is in contradiction with the popular notion that deposits in commercial bank savings accounts are indeed saving.

It is in contradiction to that notion but only partially and in a somewhat involved way. For the given money supply made up of bank demand accounts and whatever currency is in the hands of the public, a shuffling in ownership of accounts indeed is not part of the saving-investment process. But the reserves banks are required to hold against saving deposits are lower than those needed for demand deposits. Consequently, whenever account holders move balances from demand accounts to saving deposits, they free some reserves on which banks can expand the existing money supply by increasing outstanding credit to the public. But that does not mean that a transfer of say \$100 from a demand account with a 10 percent reserve requirement to a saving account with a three percent reserve requirement results in a concurrent period transformation of \$100 into investment. The initial increase in bank credit with which to finance investment, of course, is only \$7. But we must remember that bank credit is a dynamic process of loan creations, repayments and renewals. Thus, at any one time an individual bank having found itself with excess reserves by the process described above, would have made a succession of loans in earlier periods by the very same process, were \$100 transferred each period from a demand to a savings account.

From each such loan the banking system would have begun a chainlike expansion of credit. At that moment in time, if the transfer process had been taking place for many periods, the

banking system would be creating approximately \$70 in new credit to finance investment. In this rather complex way then, a transfer of \$100 from a demand deposit to a saving deposit is matched by approximately \$70 of investment. Loans that are created, of course, are repaid, so it is necessary for the banking system to renew maturing loans if the transformation of account transfers into investment is to continue. More importantly however, we see that the banking system cannot completely transform a \$100 increase in a saving account, in this example, into \$100 intended investment. Thus, if the economy is not to experience a slowdown in the turnover of the money supply and a concurrent deficiency in demand for output, the money supply must grow sufficiently to make up the shortfall induced by the transfer of money from demand deposit accounts to saving accounts.

In order for the saving deposit of wage earners directly to become saving, it must pass from there to would-be investors (producers). This takes place through the specialized financial intermediaries of the economy as the public at large lends its saving to the specialized intermediaries and they in turn loan the saving to investors.

Nonbank financial intermediaries include life insurance firms, property and casualty insurance firms, pension funds, savings and loan associates and mutual savings banks. At this point in time, some offer demand deposits, others do not. A second category of financial intermediaries is made up of credit unions, consumer finance firms and commercial factors. A third category of



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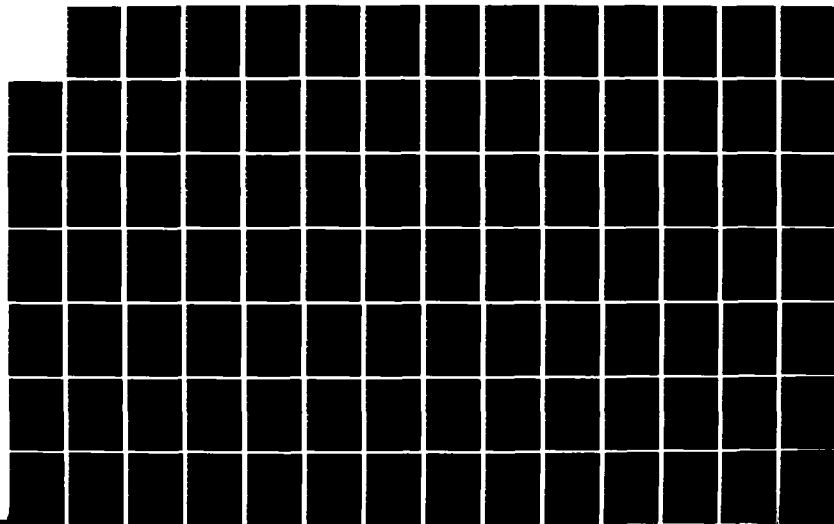
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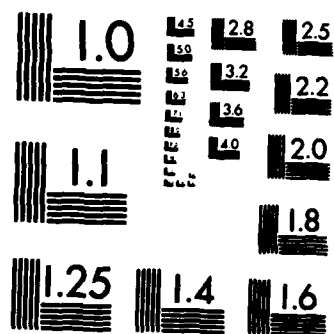
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financial intermediaries includes a host of federal government agencies and state government agencies. A fourth category of intermediaries are the mutual funds which act in part to transform saving into ownership of new productive facilities. Active bond and stock markets accommodate the activities of intermediaries acting on behalf of savers.

Along with commercial banks, these intermediaries provide the primary avenues through which money set aside out of current income can be funneled back into the mainstream of demand for produced output. Through the financial intermediaries, money set aside out of income manifests itself as loanable funds or new ownership. Thus, when funds are actually loaned to entrepreneurs and consumers, money set aside is transformed into investment and consumer demand. But while the intermediaries under discussion make the transformation possible, they continue to rely on the commercial banking system to carry out much of that function. Any intermediary accumulates liabilities as deposits which are made with it in the form of checks and currency. Simultaneously with each liability, the intermediary realizes an asset. In other words, the intermediary trades its promise to pay in the form of a passbook or statement for a deposit of money. Its promise to pay is its liability and the money deposited with it is its asset. The intermediary will in turn either relend money deposited with it to someone else or may temporarily redeposit the money with some commercial bank.

One way or another, the commercial banking system will be involved in the flow of loanable funds but only after bank depositors on their own initiative begin the movement out of their accounts to the accounts of the other intermediaries. Superimposed on this activity is the change in credit conditions that commercial banks make through their own lending activities, as explained in preceeding paragraphs.

Although the roles of all financial intermediaries are undergoing fundamental changes blurring the distinctions that formerly existed among them, differences do exist and evidently will continue. Life insurance companies act as mobilizers of loanable funds by collecting insurance premiums in a pool that exceeds their immediate need to satisfy the claims of policy holders. They pump the money so collected back into the demand stream by loaning it to the U.S. Government, residential and nonresidential construction industries, individuals, state and local governments and foreigners. Property and casualty insurance firms also collect premium deposits in pools that exceed the claims of policy holders at any one time, and they, too, direct the excess back into the mainstream of demand by making loans to the U.S. Government, state and local governments, and residential and nonresidential construction industries. At the same time, they also invest directly in plant and equipment in buying expansions of capital stock in producing firms.

Pension funds are much like insurance firms in that at any given time the amount of money deposited with them to meet future claims exceeds the amount needed to satisfy current pension claims.

Consequently, pension funds act as yet another channel by which money set aside out of income is transformed into investment demand.

Mutual savings banks, and savings and loan associations accept money in the form of checks or currency from depositors and in turn loan that money primarily to individuals for long-term investment in homes and real estate. As deposits are made in mutual savings banks, and savings and loan associations, and as those entities in turn make long-term mortgage loans, changes occur in demand deposit and time deposit balances in commercial banks. Credit unions, consumer finance companies and commercial factors, much like the other nonbank financial intermediaries act as the mobilizers of money set aside out of income. The money they accept as deposits or that they borrow in the open market by issuing their own paper, or that forms their ownership capital becomes part of the total of loanable funds in the intermediation system. However, these three intermediaries focus on satisfying consumer credit needs and short-term business and industrial credit needs. Nevertheless, their role in the circular flow is not dissimilar to the roles of the other financial intermediaries. That is, they act as a means by which money set aside out of income is funneled or pumped back into the mainstream of demand.

At the same time, they and other nonbank intermediaries cannot like the commercial banking system bring about directly an expansion of the money supply. Nevertheless, by drawing upon any accumulated idle commercial bank balances, and making loans therefrom, nonbank financial intermediaries can increase the total

of outstanding credit in the economy. In this respect, since the total of commercial bank deposits is not changed, the expansion of credit comes from the activation of idle bank balances, or said in other words, from an increase in the income velocity of money.

Federal government and state government lending agencies serve basically the same function as all the other financial intermediaries do. But they are created by law primarily to make credit available on more favorable terms to restricted sectors of the economy than would exist in their absence. Thus, for example, the Federal Land Banks mobilize long-term credit for farmers at favorable rates relative to alternative sources. But in doing so, the Banks compete with other intermediaries for available funds making the credit available through those intermediaries somewhat more costly than it would be in the absence of the Banks.

Common stock mutual funds also mobilize part of the money that individuals in an economy set aside out of current income, and in buying new shares of ownership in producing firms enable those firms to add to their productive capacity. There are mutual funds, of course, that specialize by investing in short-and-long-term debt very much like insurance firms.

In this discussion of the financial intermediation systems, we have ignored the fact that money set aside out of realized income supports not only investment demand, but finances consumer credit as well. Out of the total expenditure for consumer goods and services at any point in time, some part of it represents purchases made by individuals with borrowed money. The apparent

saving that an economy makes, then, is only partially transformed into investment. Some part of it is a transfer from those who set it aside to those who use it for consumer goods and services, and are willing to pay the going rate on borrowed money for this purpose. The individual who buys consumer goods and services on credit must eventually repay the money borrowed. This means future income of the individual will be diminished by the amount of the loan and interest that must be paid thereon. Those who lend money for consumer credit through the intermediation system get it back together with interest. Accordingly, the borrower consumes now in exchange for reduced income in the future; the lender gives up consumption now for an enriched status in the future. Very probably, a part of realized interest in the future will finance some intended investment.

We see, then, that the commercial banks and other financial intermediaries act as a network of conduits which together make possible the transformation of money set aside out of income into investment and consumption demand. As we already know, they are thwarted in fulfilling their role by the speculative motives of the public with respect to idle balances; and as we shall see a competition exists between the commercial banking system and the other financial intermediaries for the deposit dollars of the saving public. But we should understand that the roles played by commercial banks and the other financial intermediaries are not cast in granite and that they are different today from what they once were and that they are at the present time in the midst of a

major metamorphosis. At this point, it will serve us well to glance backward and see what the origins of our banking system were, how it has developed since that time, and the rather momentous changes currently taking place in the financial intermediation system.

#### 4. Demand for Money, Once Again

The brief review we have made of the financial intermediation system and its role in the transformation of would-be saving into intended investment should give the reader a further understanding of the demand for money. The public in setting money aside, transforms some of it directly into primary debt and capital stock. For the rest of what it regards as saving, it relies on an array of agents in the financial intermediation system. Those agents, comprised of banks and nonbank institutions action for would-be savers, finance intended investment by absorbing primary securities. The intermediaries in accepting deposits from the public, issue their own securities or liabilities which are backed up by the securities of firms they help finance, and balances in cash or its equivalent. The market value of primary securities of the economy, and shares of mutual funds are subject to fluctuations in interest rates. At the same time, the uniqueness of some primary securities severely restricts the trading market for them. On the other hand, balances in saving deposit accounts of commercial banks, mutual savings banks, credit unions, savings and loan associations and the like are not related to changes in interest



rates. By the same token, neither are balances in demand deposit accounts subject to interest rate fluctuations.

Accordingly, it surely is unlikely that the public and its agents in the intermediation system would not react to interest rate changes by seeking greater liquidity in the form of deposit balances and shorter term primary securities when interest rates fall to relatively low levels, and by seeking to "lock in" the return of long-term primary securities when interest rates are thought to be relatively high.

Thus, when interest rates move lower, commercial bank demand deposits and saving deposits together with those of nonbanks are bound to grow, tending to slow down the turnover of the money supply. When interest rates in general move higher, quite the opposite sort of movement takes place with balances of saving deposits falling and the demand for primary securities rising.

To what extent there will be a consistency between intended investment and would-be savings depends upon perceptions producing firms hold of the future. When output is low and unemployment is high, producing firms are not encouraged about future earnings and eschew investment. When output and employment are high, intended investment is bound to be strong so long as firms anticipate a return on capital exceeding the cost of financing it. In this circumstance, interest rates will rise, the speculative demand for money will be low, and money being set aside out of current income together with balances shifted out of saving accounts will finance investment.

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## THE U.S. CENTRAL BANK AND ITS FINANCIAL INTERMEDIATION

1. Our Money Supply

The constituents of our money supply are:

Demand Deposits  
Federal Reserve Notes  
U.S. Treasury Currency  
United States Notes  
Standard Silver Dollars  
Fractional Coins

We refer to the constituents other than demand deposits as cash or currency. As can be seen, demand deposits and Federal Reserve notes make up the great bulk of our money supply. Demand deposits are promises on the part of commercial banks and other intermediaries to pay on demand the cash value therein. Federal Reserve notes are obligations of the Federal Reserve Banks, our central bank, and are in effect promises on their part to pay the face value shown thereon. The financial institutions banking system in their role of intermediaries borrow money from some and lends it to others. Each institution accordingly must always have a balance between its liabilities and assets as shown below:

<u>ASSETS</u>	<u>LIABILITIES</u>
cash	demand deposits
deposits with	saving deposits
other intermediaries	capital
loans	other time deposits
investments	

Generally speaking, cash and deposits with other institutions form the primary or legal reserves of a financial intermediary. A

federally chartered bank must maintain any deposits it counts as part of its legally mandated reserves on account with a Federal Reserve Bank. A state chartered bank must maintain any deposits it counts as part of its legally mandated reserves on account with other commercial banks designated by state authority, but those reserves must ultimately be traceable to the Federal Reserve Banks.

## 2. Early Time

Banking histories and banking laws tell us much about our system of money and credit.<sup>1</sup> Two centuries ago the character of both the money supply and the intermediation system was much different than today, but the basic need for credit to facilitate trade and investment existed then and means were found to satisfy it. At the time of the Revolutionary War, the emerging American nation depended upon full bodied foreign coins (specie), for much of its money supply. Gold and silver were the mainstay of the monetary exchange system. A full bodied coin is not a proxy medium but contains an amount of gold or silver generally equal in price to the coin's face value. Our money supply no longer includes full bodied coins but they are still to be found in circulation in many other countries.

Even though full bodied coins were a mainstay of the monetary exchange system, there was a need for credit. However, in

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<sup>1</sup>Among a number of histories from which the following discussion is drawn are Prather, C. L., Money and Banking, R. D. Irwin, Homewood IL, 1969; Conant, C. A., A History of Modern Banks of Issue, A. M. Kelley, New York, 1969; & Chandler, L. V., The Economics of Money and Banking, Harper & Row, New York, 1964.

those days we did not yet have an organized banking and financial intermediation system. In its absence, craftsmen and trading houses lent money, not only for their own purposes but acted as banks by supplying funds in the form of bills of trade to individuals and firms pursuing their particular interest. By virtue of those lending activities, a credit market or money supply existed which facilitated the movement of goods and services.

In the midst of that credit market can be found the activities of the Second Continental Congress. The Congress sought to pay for the Revolutionary War by issuing some \$240 million in notes because of its inability to borrow by other means and its reluctance to raise taxes in the necessary amount. The notes were used to buy war materiel and to pay soldiers, and supposedly were promises to pay full bodied money for anyone wanting to redeem them. Actually the Congress had no gold and silver revenue with which to redeem its paper money. There being an extreme reluctance on the part of people to accept the Continental money, it did not have the effect by itself of raising prices but was increasingly discounted. At the same time, those who did accept it in trade suffered substantial losses because of its continuing depreciation. By the end of the Revolutionary War, the paper money had all but ceased to circulate. Individual states also issued their own notes of credit during the Revolutionary War, but by and large those notes were no better received by the public than were the Continental notes.

Nevertheless, while the private economy sought to avoid accepting and using government issued paper money, the need for

credit with which to exchange a growing volume of goods and services remained. Consequently, the private banking activity of trading houses and craftsmen tended to grow with the expanding economic activity in the new nation. However, the demands of production and trade were rapidly outstripping the capabilities of the full bodied monetary system augmented by private banking efforts. Consequently, the individual states and the U.S. Congress soon after the end of the War began chartering by special legislative acts corporations primarily to engage in banking activities. The Bank of North America opened its doors in Philadelphia in 1782 as the first bank chartered by the U.S. Congress. The event marked the beginning of the commercial banking system of the United States; over the succeeding 200 years, it was to undergo a number of significant changes.

The commercial banking system that eventually emerged was the outgrowth of the conflict between advocates of states rights and the advocates of a strong national government, the conflict between monopoly banking interest and "free" banking interest and the persistent search for a uniform and stable currency. The specially chartered banks that were created in the early days of the Republic enjoyed near monopoly conditions and they operated primarily by issuing their own bank notes and accepting deposits of specie and each other's deposits. They also acted as fiscal agents for their state governments. In those days, bank checks were practically unknown in a predominantly agrarian economy, and the nation's money

supply was made up of circulating bank notes and gold and silver coins. The issue of notes was a principal means of earning profit for those banks.

Soon after the founding of the Republic in 1789, the U.S. Treasury under the leadership of Alexander Hamilton sought authority for a government bank. The question of the bank became part of an emerging political controversy relative to the centralization of political power, and in this first confrontation the Hamilton supporters in Congress were successful. The U.S. Congress chartered the first Bank of the United States in 1791 for 20 years. The bank had a capitalization of \$10 million subscribed to by both the federal government and private investors. It acted as the fiscal agent for the federal government and was the largest bank in the nation with branches in all principal cities. It issued its own bank notes and performed other typical commercial bank functions. But because it was much larger than other commercial banks of the time and because its branches were to be found in all parts of country, its activity had the impact of a central bank. That is, it could control to a substantial degree the operations of other commercial banks.

In choosing to expand its loans, for example, and recirculating the notes of other banks, it permitted those banks to maintain their loans and note issue at a high level. On the other hand, if it chose to restrict its loans and to force other banks to reduce their notes it could siphon off their reserves of gold and silver and bank note reserves, thereby restricting their lending

and note issue operations. The control that it thus could exercise over the operations of the other commercial banks led increasing opposition to its existence on the part of the banks themselves and states rights sympathizers. That opposition grew strong enough so that the bank's charter was not renewed by Congress and it went out of business in 1811. The demise of the first Bank of the United States coincided with the War of 1812, and the demands of war finance caused a multiple increase in state chartered bank notes and other paper money issued by private bankers. At the same time, the number of banks more than doubled from about 90 to some 240.

Because most of the banks refused to redeem their own notes in specie, the value of those notes varied widely. The troublesome problems created in trade, industry and agriculture in everyday exchange and those faced by the federal government in borrowing and raising taxes to pay for the war led to a reform movement. As a result, the second Bank of the United States was chartered in 1816 for 20 years. It was capitalized at \$35 million, \$7 million of which was subscribed to by the federal government, the remainder by private interests. Much like the first Bank, it operated as a commercial bank with branches in major cities. It came to hold about a third of all banking assets by virtue of its size, and it was also able to exert central bank functions as the first bank did in regulating state chartered bank note issue and lending practices.



### 3. The Jacksonian Era and Its Aftermath

The Second Bank succeeded in bringing about some uniformity to state bank notes and a reasonable stability to financial conditions in the country. But its officers, particularly in the Jacksonian era, apparently indulged the Bank in political activities in opposition to the President and his party. The effect of this was simply to harden and enlarge the antagonism of the factions arrayed against it. These factions included those who were apprehensive of the power the Bank exercised in money matters, those who thought the Bank unconstitutional, and surprisingly those who wanted easy money as well as those who thought only specie should serve as money. In the end, the Jackson forces in Congress blocked renewal of the Bank's charter.

It should be noted that while the need for paper currency and commercial credit in the early history of the United States was met by the combination of state chartered banks, the first and second Bank of the United States and private banks, the demand for coins as a basic element in the money supply was satisfied by the U.S. mint, established by the Coinage Act of 1792. That law provided for "full bodied" gold and silver coins in the ratio of 15 to 1 and set the pattern of a bimetallic standard of money that was to last until the Great Depression of the twentieth century. Under the law, free coinage of gold and silver was authorized and all such coins were given legal tender status; at the same time, the ownership and hoarding of gold and silver coins was permitted.

As the commercial banking system and bimetallic standard of money developed, there was a growing resentment on the part of the public at large and commerce and business with the monopolistic character of the banking industry. The monopoly structure of banking resulted from the way in which banks were chartered. As the pressures against restricted entry into the banking field grew, several state legislatures passed laws which eliminated the need to charter a new bank by special act. Under the liberalized legislation, charters could be granted to banks meeting minimum capital requirements and agreeing to submit to state regulation. As a result of the free banking legislation, the number of state chartered banks proliferated from some 500 in the mid-1830's to more than 1500 on the eve of the Civil War.

The impetus for the increase in the number of banks was two-fold in that there was demand for credit and money as a medium of exchange, and the lure of profitability in bank note issue drew many newcomers into the banking field. But as the number of banks grew, the regulation over them by state authorities varied widely from state to state and the era of wildcat banking was at hand. Lack of criteria for capitalization and reserves produced a mushrooming of paper money; and an immense nonuniformity of paper money, bank failures and ventures in fraud characterized the financial intermediation scene of the times. This is not to say that some banks were not operating in a prudent manner, but the gold and silver reserves of others were nonexistent.

State chartered banks until the middle of the Civil War made up the commercial banking system of the United States. Because of the lack of control and regulation over their operations, the many banks issued notes of widely differing value and acceptability and resultingly the bank notes of banks in many cases were heavily discounted outside their immediate areas. The U.S. Treasury, to protect itself from the risks of dealing in the great nonuniformity of paper currency, in 1837 soon after the demise of the second Bank, imposed a requirement on its tax agents to collect revenue in specie only. Since this caused redemptions of bloated bank note issues to grow all out of proportion to the banks' gold and silver reserves it precipitated the first of a number of financial panics the United States was to experience over the next 70 years. The Treasury continued its policy of avoiding bank notes and in effect set up its own full-bodied coin and bullion monetary system until 1863 when the National Currency Act became law.

During the interval of time between the liquidation of the second Bank of the United States and the beginning of the Civil War, then, the commercial banking industry greatly expanded in response to the growth of trade, agriculture and transportation. It was the era, so to speak, of a bank note money supply, although the use of demand deposits and bank checks was growing in popularity as communications and transportation improved.

While the number of banks and their notes was growing, gold and silver specie continued to circulate. But the Gold Bill of 1834 reduced the gold content of the U.S. dollar and in so doing

changed the coinage ratio of silver and gold to 16 to 1. The effect of the change was to make gold our standard money, and since full-bodied silver coins were somewhat underpriced, they eventually disappeared from circulation. During the time from the death of the second Bank of the United States to the eve of the Civil War, many of the commercial banks in the larger eastern cities redeemed their notes in gold specie as a matter of course. So gold coins continued to circulate. But the note issues of banks along the western frontier, because of the taint of corrupt operations, reduced and restricted the acceptability of bank notes and created a morass of nonuniformity of value in them.

So it was that the period of time from 1837 to the Civil War was predominated by free banking, the rise of state chartered banking with a mixed pattern of state regulation and a proliferation of bank notes of varying acceptability, especially at great distances from the bank of issue. It was also characterized by the circulation of gold specie and an increasing popularity of demand deposits subject to check. During this time, abuses in bank note issue were at times epidemic, redeemability was uncertain and bank failures were common. The handmaiden to free banking was unit banking whereby some states that chartered banking corporations limited them to one place of business as opposed to operating from a number of branches.

So up to the Civil War a number of characteristics in the banking industry had taken form although they did not all come together. The glimmerings of monetary policy and central bank

control were evident during the lives of the two Banks of the United States. Bank note issue as the forerunner of today's paper currency was a fact of life and demand deposits were becoming more and more important with improvements in communication and transportation. The U.S. Mint produced token and full bodied gold and silver coins which circulated in the exchange of goods and services. And a halting movement towards bank regulation by state authorities was under way. We should observe in all this that the economy was growing, that it could not have grown as it did without credit and that credit demand was being satisfied by bank note issue augmented by a variety of trade bills and other instruments of trade credit.

#### 4. The National Banking System

The Civil War imposed enormous financing problems on the federal government, and it was forced to seek out ways to pay for war costs. To this end, in 1862, the U.S. Congress enacted legislation authorizing the U.S. Treasury to issue irredeemable United States notes (green backs) as legal tender for federal government obligations. One might puzzle over the reasons underlying the issue of irredeemable paper money, but the rationale can be readily understood if one keeps in mind that an electorate is much less conscious of paying for government costs from an inflated currency than if it is taxed directly for that purpose. When government absorbs resources from the economy whether it pays for them with tax money or an increase in paper money is beside the point. By the former alternative, the private sector realizes less

take home pay; by the latter alternative, it realizes the same take home pay, but it can buy an output diminished by what the government has requisitioned with its fabricated money. The relative efficacy of each of these approaches, together with that of borrowing, in government financing problems will be explored in more detail in the chapters ahead. At any rate, the federal government issued the green backs in payment of some of its obligations, and surprisingly some of that money is still outstanding.

At the same time, because of the near chaotic conditions that existed in the "free" banking industry, growing political sentiment for a federally chartered system of commercial banks induced Congress to pass the National Currency Act, which the President signed into law in December 1963. Because of some manifest weaknesses, the law was overhauled the succeeding year as the National Banking Act. In the legislation, a Comptroller of the Currency was established in the U.S. Treasury Department with the authority to charter banks in a national system. The Comptroller's office and functions exist to this day, to provide a uniform and nationally acceptable currency. The law authorized federally chartered banks to issue National Bank Notes as their own obligations, but backed by U.S. Government securities and guaranteed by the U.S. Government.<sup>2</sup> Every national bank was required to accept at face value the bank notes of all other national banks. The minimum

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<sup>2</sup>The Bureau of Engraving, established in the same law, was responsible for printing National Bank Notes.

required capitalization for a bank varied from \$50,000 to \$200,000, banks in the larger cities having the higher requirements.

Congress apparently expected state chartered banks to choose national charter, but contrary to those expectations only a few of those banks chose to seek a national charter because of the limitations they saw on note issue and deposit operations. So in order to compel those banks to join the national system, Congress amended the 1864 law in the same year by imposing a 10% tax on all banks that paid out state chartered bank notes.<sup>3</sup>

This had the desired effect of causing state banks to give up their charters and join the national system. The number of state banks dropped from about 1100 in 1864 to approximately 250 four years later.<sup>4</sup> The number of state banks, however, soon began to increase and by the mid-1890's exceeded the number of national banks. This occurred because as the economy became more sophisticated, it depended increasingly upon demand deposits and the use of bank checks to conduct its business. Commercial banks found that there was just as much profit to be made in demand deposit operations as there was in note issue. This was reflected in the volume of banking activity associated with each class of banks. In 1870, while outnumbering state banks 1600 to 325, national banks held approximately 88 percent of all bank assets of \$1,781 million; in

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<sup>3</sup>13 Stat 99, 1965.

<sup>4</sup>Federal Reserve Board of Governors, Committee Reports, "The Dual Banking System," p. 135, 1933. Federal Reserve Board of Governors, Banking Studies, Washington DC, 1941, p. 418.

1900, by then outnumbered by state banks 3730 to 5000, they held approximately 44 percent of all bank assets of \$1.14 billion.

The banking and currency laws enacted by the U.S. Congress during the Civil War gave the country a national system of banks and a uniform currency made up principally of National Bank Notes, obligations of the national banks, and United States Notes, obligations of the U.S. Treasury. The standardization of banking practices and uniformity of currency were improvements over what existed in the era of free banking preceding the Civil War. But the new banking structure contained a major flaw that was to precipitate a number of financial panics, bank failures and credit stringencies over the next 45 years and would lead to the birth of the Federal Reserve System in 1913.

The flaw was the inherent inflexibility of the structure and the inability of the banking system to respond to periodic increases in demands for bank currency by the public. According to the National Bank Act and its amendments, three classes of national banks were defined. These were central reserve city banks, reserve city banks and other banks. Banks of the first category were located in our largest cities and were required to maintain 25% reserves against deposits in the form of cash in their own vaults. The second category of banks was established in 47 "reserve cities." Those banks could maintain half a required 25% reserve against deposits in the form of deposits with other banks. National banks in other than central reserve and reserve cities needed to maintain only a 15% reserve against deposits, and



additionally, could keep 3/5 of that required reserve in the form of deposits with other banks. The smaller banks made use of this provision in the law and established correspondent relations with the central reserve city banks and reserve city banks.

All of this led to a concentration of bank reserves in the vaults of the central reserve city banks and a highly inflexible and inelastic monetary system. The banks in the larger cities were vulnerable to sudden spurts in demand for currency not only from their own nonbank customers but from their correspondent banks, part of whose reserves they were holding in form of deposits. From time to time, country banks would experience increases in demand for cash and to satisfy those demands would draw down their reserve accounts with the reserve city banks. Those banks in turn, to satisfy correspondent bank demands, would seek to draw down their reserves with central reserve city banks. In such situations, at the minimum, credit strains would manifest themselves throughout the monetary system, and on a number of occasions, financial panics ensued as the central reserve city banks would be forced to call loans and suspend payments of specie and currency on demand.<sup>5</sup>

The problem was complicated by the requirement in the National Banking Act that national bank notes could be issued only against U.S. Government bonds and could not exceed in dollar amount

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<sup>5</sup>Panics of 1873, 1884, 1893 and 1907 involving the temporary collapse of the banking system and ensuing depression were a bewildering succession of bank crises.

90 percent of the face value or market value of the bonds. These and other restrictions together with the decline in the outstanding amount of federal bonds seemingly enhanced the safety of bank notes but in reality aggravated the problems of inflexibility and inelasticity.

#### 5. The Federal Reserve System

The pervasive threat of credit strain and financial panic motivated increasing criticism of the National Banking System, and in spite of the spectacular resurgence of state chartered banks, the time for the reform of the banking system and the creation of a central bank was at hand. Surprisingly enough, the United States was the last of the great industrial powers to establish a central bank to oversee its monetary system. But in 1908, in the wake of the disastrous Panic of 1907, a National Monetary Commission was created as part of the Aldrich-Vreeland Act to study and make recommendations to the U.S. Congress for monetary system reform.

The recommendations of the Commission, while not followed very strictly by the U.S. Congress, resulted in the Federal Reserve Act in 1913. Although not radically altering the existing dual banking system of the country, the act did substantially enhance its flexibility, reliability and responsiveness with respect to the demands of the economy and thereby did remedy its existing weaknesses. At the same time, the opposing political currents with respect to agricultural interests and sentiments for centralized control produced a unique system. The law created a Federal Reserve System to which all nationally chartered banks must belong

and to which state chartered banks could belong at their option provided they met membership prerequisites. The System was organized into 12 districts (and remains so organized today) in each of which was located a Federal Reserve bank, created to satisfy the needs of member banks in that district with respect to borrowing money, collecting checks, transferring funds, and providing currency. A Board of Governors located in Washington DC and consisting of seven members was created to supervise, administer and set monetary policy for the System.

The law provided that each Federal Reserve bank would be capitalized by subscriptions imposed on each of the member commercial banks within its district. Thus, the Federal Reserve banks are owned by the member banks they serve, and they each act in the capacity of a central bank in maintaining member bank reserves, issuing and reissuing paper currency and performing the functions of a fiscal agent for the U.S. Government. Each Federal Reserve bank was empowered by the law to make short-term loans on the strength of commercial paper to member banks for the purpose of meeting imposed legal reserve requirements. Authority to set legal reserve minimums within established limits was vested in the Board of Governors.

The Federal Reserve Act also gave the Federal Reserve banks authority to buy and sell U.S. government securities, bankers acceptances and selected commercial paper in the open market as an additional means of controlling commercial bank credit. The power of the Federal Reserve to discount commercial paper from member

commercial banks and to buy and sell securities in the open market gave the national banking system a flexibility to respond to changing requirements that was lacking before 1913. Because of the contradictions in Federal Reserve policy that were precipitated from time to time as each Federal Reserve bank operated in the open market independently, a Federal Open Market Committee was created by a 1933 amendment to the Federal Reserve Act. The Committee, made up of the seven governors and five Federal Reserve bank presidents, (four of the latter rotating annually) centralized the open market function for all the banks. Today the Committee carries out this most powerful of Federal Reserve credit controls by issuing guidance to the manager of the Federal Open Market Account located in the Federal Reserve Bank of New York.

The Federal Reserve System was a substantial improvement over the National Bank System, but unfortunately it also had two major flaws which went undetected until the onset of the Great Depression. Perhaps the more crucial of these was the lack of restrictions on member bank credit operations. Consequently, in the late 1920's, after the nation's commercial banks had financed much of the stock market's speculative binge, its collapse meant the demise of many of those banks. At the same time, there was no device for protecting depositors against bank failures.

Resultingly, after the stock market and banking debacle of 1929-1933, the Federal Reserve Act was amended to limit the loan and investment operations of member banks and to give the Federal Reserve Board of Governors a far greater degree of control over

member bank operations. At the same time, the U.S. Congress instituted a temporary deposit insurance plan which was the forerunner of the Federal Deposit Insurance Corporation Act of 1935. The act was designed primarily to protect small bank depositors against loss, but by insuring bank deposits up to \$5,000 (since increased to \$100,000), it also relieved the threat of drains on bank reserves engendered by a lack of confidence in the banking systems' stability. At the same time, it provided for increased federal supervision of the banking system by requiring any bank joining the FDIC to be subject to its criteria, supervision and examination. Member banks of the Federal Reserve were required to belong to the FDIC, and state chartered banks could join at their discretion.

The FDIC was originally capitalized at \$289 million by the Federal Reserve and U.S. Government. Since that time, all its capital stock has been retired but the corporation in 1978 had a Deposit Insurance Fund of approximately \$6 billion from which it draws to make good insured deposits of any failed bank. The fund is maintained by assessments on each insured bank at the approximate rate of 1/12 of 1 percent of its total deposits.

The Stock Market Crash of 1929, the Great Depression, and the collapse of the banking system in the early 1930's resulted in substantially increased authority for the federal government to examine and supervise commercial bank operations in order that the integrity of the nation's money supply could be assured, thus providing a safety of deposit for money and limitations on the expansion of bank credit. Coupled with that, beginning in 1933,

successive amendments to the Federal Reserve Act gave the Federal Reserve System increasing authority to regulate the allocation of credit throughout the economy. The Board of Governors has and uses what are called selective controls; it has the power to set credit limits on the purchase of securities listed on stock market exchanges, it can set minimum down payments and maximum periods of repayment in consumer credit and real estate loans and it has a number of other controls of this nature.

The increased authority of the federal government to regulate commercial bank operations since the Great Depression was accompanied by a further shift away from the nineteenth century philosophy of "free banking." The trend in limiting new entry into the banking industry has been ascribed to the jurisdictional jealousies existing among the U.S. Comptroller of the Currency, the FDIC, the Federal Reserve Board of Governors and the 50 state regulator agencies. Whatever the reason, it is a fact that the banking industry of the U.S. is a highly concentrated one. Of the more than 13,000 commercial banks, less than 700 account for nearly 70 percent of total deposits. Today, besides the opposing views with respect to banking industry concentration, an ongoing debate centers on whether or not the Federal Reserve should continue to be independent of the Administration in power, another on whether or not all commercial banks should be required to belong to the Federal Reserve and yet another on whether or not other financial intermediaries should have demand deposit functions. As referred to in the last chapter, the most recent amendment to the Federal

Reserve Act, that is, Financial Institutions Deregulation and Monetary Control Act of 1980, has for all practical purposes settled the debate. Under the law, which is bringing about truly significant changes, all financial depository intermediaries, not just commercial banks, are subject to reserve requirements determined by the Federal Reserve Board of Governors. The law also permits interest to be paid on demand deposits, and permits, as discussed in the last chapter, financial institutions in general to offer demand deposit accounts to the public. A further feature of the law eliminates in gradual steps all limitations on interest rate ceiling financial institutions may pay on accounts, and it removes most limitations on the sort of credit banks and nonbanks may create for the economy. Prior to the 1980 law, financial institutions were segregated according to function and were limited in the areas they could operate. Thus, each category was somewhat protected from incursions on its domain by other categories of institutions. This no longer is true, and the striking down of limitations and regulatory encumbrances will very probably lead the development of "supermarket" financial institutions in which an array of all sorts of services will be offered the general public by individual firms. Setting these considerations aside for the moment, let us turn to the subject of the business cycle and economic growth. Then we can see how monetary policy is invoked and the impact it may have on the way the economy functions.

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## THE BUSINESS CYCLE

1. The Dynamic Nature of the Industrial Economy

This text has emphasized repeatedly the dynamic nature of the industrialized economy. In considering our own economic history, we have observed that population and the labor force have grown, capital has been accumulated and the level of output has been expanded. However, we have also observed that none of these things has proceeded at a steady rate. Thus, as the economy has worked its way along the path of economic growth, apparently from time to time it has speeded up its progress, and alternatively slowed down recurringly in cyclical-like fashion. Evidently, there are accelerating and retarding forces lying in the background which exert themselves from time to time with varying strength. The recurring undulations that these forces produce in the economy are referred to as business cycles. There is a semblance but only a semblance of regularity in their patterns, and while similarities exist among them all, no two business cycles have been completely alike in their characteristics.

The cyclical pattern of activity that the U.S. economy goes through, as does every other economy, is reflected in changes in total output, income and employment. At some point in time, output and employment will be relatively low, meaning that productive capacity is substantially underutilized. The economy is in the trough of the business cycle, so to speak, and very probably the outlook of people, consumers, the labor force and management of

producing firms is transiently pessimistic. Then activity quickens, output and employment pick up and the economy moves into the expansionary phase or upswing of the business cycle. Output and employment gather momentum and increase at substantially more rapid rates than the long-term economic growth rate of the economy. Pessimism gives way to optimism as the economy accelerates to higher levels of output and employment. In time, however, increases in activity slacken, and eventually the economy reaches a cyclical peak from which it recedes. As activity slows down, the economy enters the recessionary phase or downswing of the business cycle. Output falls and unemployment grows, while optimism fades and pessimism takes its place. The recessionary phase runs its course and the business cycle bottoms out, completing the up and down path it has taken from the earlier trough.

There are numerous theories on the motivating forces of the business cycle. Prior to Keynes, business cycle theory gained only limited recognition in mainstream economics, primarily because the cycle was at odds with the assumptions of classical theory. It was only after Keynes, that earlier work gained wide acceptance leading to yet further refinement. While being at odds with one another in various ways, the various theories generally identify changes in planned investment, availability of bank credit, market interest rates, labor force and plant capacity limitations together with expectations in one guise or another as the origins of the business cycle. Those theories can help us to understand the business cycle but none of them completely explains it. For that

matter, taken together, they do not fully answer the question, why an industrialized economy continues to grow sometimes when output is low and substantial numbers of men and women are out of work and at other times finds it necessary to slow down from its current rate of expansion. Nevertheless, we will find that in bringing together their common strands in an eclectic fashion, we can broaden our grasp of macroeconomics and the approaches that public policy takes in responding to near-term fluctuations in economic activity. We have seen in the last two chapters the crucial role that bank credit plays in the circular flow of the economy, and the control over credit that the monetary authority exerts. The Federal Reserve Board of Governors strives in its primary objectives to contain the undulations of the business cycle. But, as we shall see, it possesses no magic formula with which it can overcome the forces which our industrial economy develops within itself and which impinge on it from without. Those forces result alternatively in a demand for output in excess of what it can produce and a demand substantially below that which it can produce. Nevertheless, at all time, the levels of output, income and employment are traceable in part to monetary policy.

## 2. The Importance of Investment Changes

Changes in planned investment are generally identified as the principal reason for business cycle undulations. In the U.S., planned investment expenditures in the national income accounts are comprised of plant and equipment spending, inventory increases, and residential and nonresidential construction. While inventory

increases and residential construction add to the wealth of our economy, they do not add to productive capability. But together with plant and equipment investment, they add to the total demand for goods and services. Accordingly, plant and equipment investment plays a dual role in the circular flow of the economy. It is part of overall demand and hence has an impact on current output and employment, but in adding to productive capacity, it has an impact of economic growth. There is yet a third aspect of plant and equipment investment in that, as we will take up in the next chapter, it incorporates the technological advances by which in part, the industrialized economy increases its productive efficiency.

Table 11-1. U.S. Gross National Product and its Components in 1972  
Dollars (in \$ billions)

<u>YEAR</u>	<u>GNP</u>	<u>GPD I</u>	<u>C</u>	<u>G</u>
1970	1086	159	672	251
1971	1118	171	695	250
1972	1183	194	736	254
1973	1254	218	768	254
1974	1246	195	763	260
1975	1232	155	779	265
1976	1298	185	823	265
1977	1370	214	864	269
1978	1439	237	903	275
1979	1479	236	928	278
1980	1474	208	930	285

Source: U.S. Statab, 1982-83, p. 419.

For the purpose of this chapter, we set aside the presence of government and we will focus on the role that planned investment, and particularly plant and equipment spending, plays as part of current demand. Naturally a complete understanding of the

business cycle calls for an analysis of the role of government, but for now let us assume away its presence. In looking at Table 11-1, and recalling the discussion of national income accounts in Chapter 3, we observe that Gross Private Domestic Investment has varied much more widely than has GNP in the United States. At the same time, we observe that consumption expenditures have tended to increase steadily. Those investment fluctuations are in keeping with the acceleration principle according to which changes in the marketed output of producing firms induces a magnified change in their planned investment.<sup>1</sup> Thus, there is a strong tie between the rate of change of output of a firm and its planned additions to output capability. An inherent assumption of the acceleration principle is that there is a desired ratio of capital to output the producing firm seeks to maintain. This may be expressed as:

$$(1) \quad K = \alpha Q$$

For some particular point in time,  $t-1$ , the desired ratio would be:

$$(2) \quad K_{t-1} = \alpha Q_{t-1}$$

In the face of an increase in output during the succeeding period, the desired ratio would be:

$$(3) \quad K_t = \alpha Q_t$$

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<sup>1</sup>Attributed to J. M. Clark in "Business Accelerations and the Law of Demand," Journal of Political Economy, Vol No. 25, 1917, pp. 217-235.

Subtracting the earlier equation from the latter we have:

$$(4) \quad K_t - K_{t-1} = \alpha (Q_t - Q_{t-1})$$

But the difference in capital from one period to the next is the net investment that has taken place. Apparently, then we can express (4) as

$$(5) \quad I = \alpha (Q_t - Q_{t-1})$$

which tells us that desired investment is proportional to the rate of change in output. In this respect, we should keep in mind that the individual firm invests in a lump of capital because there is a promise that it will produce a return over and above its invested cost during its lifetime all the while depreciating in value by reason of wear and tear and the technological obsolescence that is imposed on it by later vintages of capital. But it is durability and lumpiness that precipitates the magnified variations in planned investment as the firm responds to changes in demand for its output. Just how this takes place according to the acceleration principle can be seen, as is commonly illustrated in economic texts, in Table 11-1 where hypothetical values of output, gross investment, desired capital and in-place capital for a producing firm are shown.

The table is based on the assumptions that the firm's desired capital-to-output ratio is 3, and that at period 1, previous conditions were such that \$20 million of capital would be replaced each succeeding period in the absence of any change in output.

Table 11-2

<u>Period</u>	<u>Output</u>	<u>Capital</u>	<u>In-Place Capital</u>	<u>Replace- ment</u>	<u>Gross Investment</u>
1	100	300	300	20	20
2	100	300	300	20	20
3	100	300	300	20	20
4	110	330	300	20	50
5	120	360	330	20	50
6	130	390	367	20	50
7	130	390	390	20	20
8	130	390	390	20	20
9	130	390	390	20	20
10	120	360	390	0	0
11	110	330	370	0	0
12	100	300	350	0	0
13	100	300	330	0	0
14	100	300	310	0	0
15	100	300	300	10	10
16	100	300	300	20	20
17	110	330	300	20	50
18	110	330	330	20	20
19	110	330	330	50	50
20	100	300	330	20	20

We observe that for the first three periods, output holds steady at \$100 million, in-place capital is that desired and gross investment is \$20 million comprised entirely of depreciation replacement. In period 4, however, on the basis of a 10 percent increase in output, we see that the firm's gross investment jumps by 150 percent and in the next two periods remains at that level as output continues to climb. Evidently, for gross investment to remain at the higher level, output must continue to increase. Once output levels off, additions to capital come to an end and gross investment is once more simply the replacement of depreciated capital. In period 10, when output falls back as the result of declining sales, the firm finds itself with more capital on hand

than it needs, and so does not replace its depreciated plant of the previous period. Consequently, its gross investment is zero. For the individual firm at this point with further declines in output, the alternatives would be to let its in-place capital fall by not replacing its depreciation as in the table, or by reducing in-place capital to the desired level more rapidly by a combination of not replacing depreciation and selling off part of it to some other firm. Once again, when output increases, gross investment increases by a multiple of the output increase. Eventually in period 19, we see that the increase in capital of period four must be replaced, so that were the output of the firm to remain steady, future periods would witness an undulation in investment brought on by the replacement of much earlier undulations of in-place capital.

Table 11-2 characterizes the response of the individual firm to changes in demand for its output. In this respect, while the individual firm might adjust its capital-to-output ratio by selling off some of its in-place capital to other firms, the economy as a whole could not rid itself of excess capital, but in the event of depressed output would simply let its in-place capital depreciate down to some desired level.

Producing firms for the most part do not build their own capital. In an industrialized economy, certain industries devote themselves exclusive to the output of capital goods. Table 11-2 implies it is the output of the capital goods industries that fluctuates much more violently than that of other industries. In looking at Table 11-2, we can deduce two reasons for the magnified



impact that changing levels of output of firms in a consumer goods industry have on the demand for and output of capital goods. One, of course, is that it is the desired ratio of capital to output which itself brings about a change in planned investment that must be a multiple of the change in output. The second reason is not so apparent. It is that capital is durable and the life of much of invested capital is lengthy and extends far beyond one production period. If capital were not durable and were depreciated wholly in the current production cycle, the surges and collapses in investment for this reason would disappear. As it is, the difference in output fluctuations between capital goods industries and consumer goods industries is significant.

But there are countervailing elements that moderate that difference somewhat, and one is that some consumer goods themselves are durable in nature. Because of that durability, demand for output of some consumer goods industries tends, also, to be cyclical in nature. In the U.S., the cyclical nature of durable consumer goods industries is readily apparent. Thus, producing firms are not prone to maintaining an inflexible capital-to-output ratio, but operate within a range of plant capacity utilization. The difference in fluctuations between the two industry groups is also moderated by the fact that each piece of produced capital does not have a predetermined and fixed life any more than a human being has. Depending upon the unique circumstances in which it is employed, one piece of capital may outlast or expire before another identical piece even in the same producing firm. Table 11-2

ignores the dampening effect that the varying lives of capital installations have on the output of capital goods industries.

At the same time, we generally make plans for tomorrow not solely on the experience of today but take account of what took place yesterday and for that matter what we encountered in yet earlier days. This suggests that equation (5) is an overly-simplified version of the accelerated impact that the change in output has on a firm's investment expenditures. The relationship is further complicated by the fact that investment plans are not instantaneously executed but are executed with substantial lags between the time a firm decides to increase plant capacity and when the plant is actually expanded. Initial investment plans, too, are subject to modification from ongoing experience. Accordingly, recognizing the impact of earlier experience and the investment lag, one might express the accelerator principle as:

$$(6) \quad K_t = \alpha [Q_t + (1-B)Q_{t-1} + (1-B)^2Q_{t-2} + \dots]^2$$

Where B is a fraction less than one and:

$$(7) \quad K_{t-1} = \alpha [Q_{t-1} + (1-B)Q_{t-2} + (1-B)^2Q_{t-3} + \dots] \quad \text{or}$$

$$(8) \quad (1-B)K_{t-1} = \alpha [(1-B)Q_{t-1} + (1-B)^2Q_{t-2} + (1-B)^3Q_{t-3} + \dots]$$

Subtracting (8) from (6) leads to:

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<sup>2</sup>From L. M. Koyck, Distributed Lags and Investment Analysis, Amsterdam: North Holland, 1954, p. 63.

$$(9) \quad K_t - (1-B)K_{t-1} = \alpha Q_t$$

$$K_t = \alpha Q_t + (1-B)K_{t-1}$$

$$K_{t-1} + I_t = \alpha Q_t + (1-B)K_{t-1}$$

$$I_t = \alpha Q_t + (1-B)K_{t-1} - K_{t-1}$$

$$I_t = \alpha Q_t - BK_{t-1}$$

Taken together, the inherent considerations and assumptions of the accelerator principle tell us that principally because of the durability of capital and because of the capital-to-output ratio, recurring fluctuations in output and employment will manifest themselves in the industrialized economy, leading to cyclical fluctuations in unemployment. Men and women in the labor force, particularly in the capital goods industries, from time to time are thrown out of work and must bide their time until employment picks up again.

### 3. The Multiplier, Accelerator and Economic Growth

Table 11-2, however, is somewhat misleading and ignores the ongoing growth of an economy. It indicates that the firm over a 20 year period grew not at all. In an economy where technological advance and population increases are taking place, and a producing firm is retaining some of its realized earnings, it must grow unless it is paying out to its owner in one form or another all its income and capital that it otherwise would be accumulating. Of course, some producing firms do not grow and some at any particular time are disappearing altogether, but the industrialized economy comprised of producing firms as it is, does grow by virtue

of the investment process. Consequently, some firms must grow. Economic growth is the subject of the next chapter, but in continuing our discussion of the business cycle, it is well for us to keep in mind that the latter is superimposed on the underlying secular movement of the industrialized economy. As shown in Figure 11-1, that underlying movement is upward.

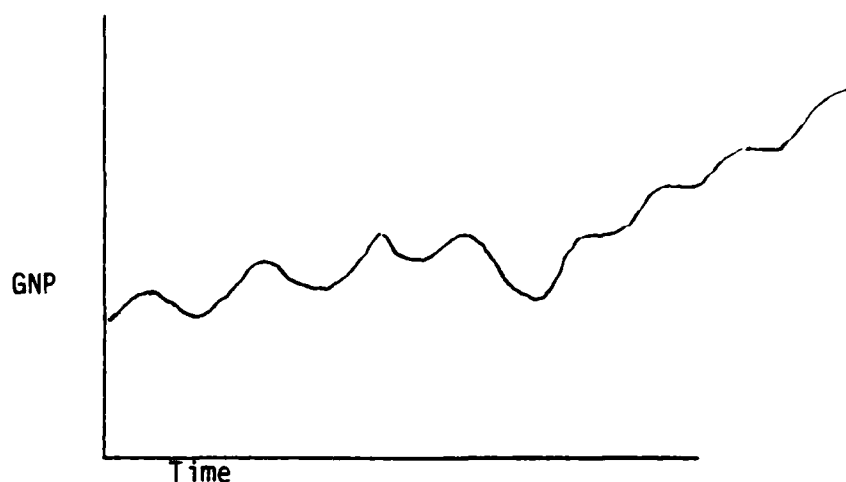


FIGURE 11-1. The Business Cycle Through Time

Figure 11-1 suggests that if individual firms do from time to time accumulate recaptured depreciation, it is likely that capital replacement itself is not a stable function but bunches up and wanes periodically. Each business cycle for this reason will have its own unique characteristics and seldom will one follow very closely the up and down path of its predecessors.

We are well aware that apart from the accelerator, in keeping with Keynesian theory, any increase in demand for output of

goods and services will have a subsequent impact on output, employment and demand. If an increase is sustained, there will be a multiplied impact on the circular flow. This suggests, then, that there is bound to be an interaction between the two, the multiplier and the accelerator. One of the best known explanations of that phenomenon was made by P. A. Samuelson.<sup>3</sup> His rather complicated mathematical analysis suggests there are alternative paths an economy might take as the result of a change in demand for output. If a high marginal propensity to consume were combined with a high ratio of added capital-to-output, the result would be an explosive increase in demand. Alternatively, somewhat reduced values of the two, MPC and  $\nabla K/\nabla Q$ , would produce successively more violent oscillations in demand for output. More likely, according to his theory, the values of MPC and  $K/Q$  would be such that oscillations in demand would gradually subside and approach a new, higher level of output predicted by the simple multiplier.

#### 4. The Limits of Business Cycle Expansion and Recession

The industrialized economy does indeed move inexorably to higher levels of output, but as has already been brought out that movement is unpredictable with any degree of precision, and there is more than changes in investment involved. For an incremental

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<sup>3</sup>P. A. Samuelson, "Interactions Between the Multiplier and the Principle of Acceleration," Review of Economics and Statistics, Vol XXI, No. 2, May, 1939, pp. 75-78. For another development, see J. R. Hicks, A Contribution to the Theory of the Trade Cycle, London: Clarendon Press, 1950.

increase in demand, output and employment do increase according to the multiplier and the induced investment of the accelerator. The economy expands more rapidly than its long-term rate of growth but not for long. It can do so in the short run, however, only because some of the labor force is unemployed and some of its plant capacity lies fallow. Sooner or later it will reach the limit of short-run expansion dictated by the availability of those two resources. The labor force grows relatively slowly and its growth influences the level of investment. Accordingly, the demand for output must slow down more than would be anticipated from the satisfaction of consumer durable needs alone. As consumer demand growth ebbs, induced investment is curtailed and in time evaporates completely. Concurrently, growing scarcity of labor discourages investment in general. We are well aware, of course, that rising wages associated with labor scarcity motivate firms to substitute capital for labor, but that process takes time and its impact will probably materialize in the next business cycle.

At the same time, two other constraints loom larger and larger in the business expansion, both somewhat related to one another. First, as in-place plant utilization rises, diminishing returns in time will set in and before long cause average cost to produce to rise. Secondly, in the face of rising average costs, firms demand more short-term credit as do consumers and cause interest rates to rise. These two bottlenecks, rising average cost and the rising cost of money, put further decelerating pressure on the business expansion, and together with changes in consumer and

investment demand eventually bring the relatively rapid upward movement of the economy to an end. It is conceivable that the slowdown in demand growth and the effect on productivity of ongoing investment would compensate for rising average cost and the rising cost of credit in such a way that instead of rolling over into a recessionary phase, the economy would slow down to a stabilized rate of expansion. Things do not seem to work out that way. The upward pressure on the price level that expansion generates causes both price and wage levels to rise, and as demand growth slackens, producing firms in the industrial economy cannot react by offering output at lower prices in order to maintain current production levels. Firms are left with little choice but to reduce output and employment. As employment falls, the growth in demand ends, and demand recedes to lower levels. Whatever decline in interest rates that follow the ebbing of the business cycle crest seem insufficient to stem the turn of the tide.

The multiplier and accelerator now act in reverse and demand for output falls. We have seen that an economy in the downswing of the business cycle may disinvest itself of capital; that is, it will not replace its depreciated capital so that its accumulation of capital will fall to some lower level. The rate of depreciation acts as a brake on the decline in overall demand, however, and in time producing firms must begin replacing depreciated capital as the desired ratio of capital-to-declining demand is reached.

What finally does bring the recessionary phase of the business cycle to a halt? In the basic terms of the consumption

function, we can provide the answer. Recalling our previous discussions, we are reasonably certain that output and employment would fall no lower than that needed for an economy to feed, clothe and shelter itself. If intended investment were to fall to zero, the tumbling economy's saving would eventually, too, reach zero and as shown in Figure 11-2, a new equilibrium would be reached where until conditions changed the economy would no longer be adding to its productive capacity.

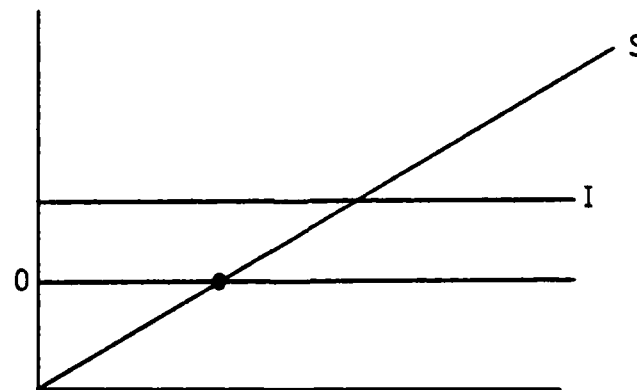
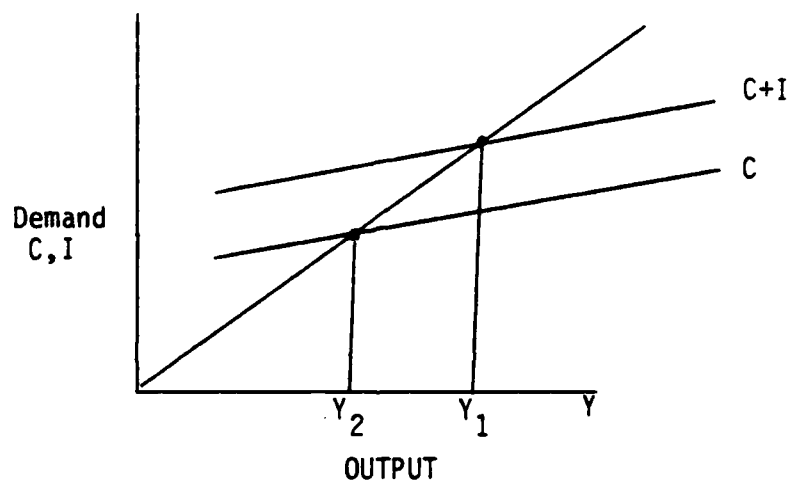


FIGURE 11-2. Intended investment changes and changes in output.



One can imagine the turmoil accompanying such a depressed level of employment as that related to  $Y_2$ . In the worst of times since the end of World War II, as for example, in 1970 and 1975 as seen in Table 11-1, there was gross investment taking place some of which exceeded replacement of depreciated capital. Thus, it is somewhat unlikely that output would fall to  $Y_2$ . Is it conceivable that output could fall below  $Y_2$ ? Yes, it is conceivable; management of producing firms could become so pessimistic that production targets would fall below  $Y_2$ . But we can see from Figure 11-2 that consumption demand would exceed output, causing inventory levels to fall and signaling firms to increase rates of output. Then, too, as we discuss in the next section somewhere in the economy, if history is any guide, sooner or later, any number of entrepreneurs would want to gamble on new ideas for producing a good or service. The financing of those ideas could be the beginning of the upswing in the business cycle.

### 5. Other Explanations

There are other ways in which the business cycle has been explained. J. A. Schumpeter suggested that it was a characteristic of the investment process itself that precipitated business cycle undulations. According to his theory, entrepreneurs seize upon new inventions and ideas to bring about innovations in producing output.<sup>4</sup> At first only the daring few take a chance on achieving

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<sup>4</sup>J. A. Schumpeter, The Theory of Economic Development, Cambridge MA: Harvard University Press, 1934.

some advantage over their competitors. Some invariably fail, but some achieve great success. Their prevailing innovations force other producing firms to "swarm" into the innovative breach; their induced investment propels the economy upward, but in time, expectations exceed demand, profits fall off, and the business cycle peaks out. Pessimism sets in, output and employment fall and the economy enters a dormant stage awaiting another innovative surge upward.

Not altogether dissimilar to Schumpeter's explanation of the business cycle is the approach that J. M. Keynes, himself, took on the subject. Keynes suggested it was the combination of the existing accumulation of capital, the current cost to produce it and current expectations on the future profitability or yield of capital that determine the amount of investment taking place at any particular time.<sup>5</sup> That combination he referred to as the marginal efficiency of capital. He emphasized the role that disillusion with the current profitability of investment in the later stage of the business cycle plays in bringing the cycle to an end. As disappointment sets in, there is a general tendency for all associated with investment to build up idle money balances thereby forcing interest rates up and aggravating still further the inevitable downturn as the uncertain spread between expected profitability and the cost of financial wherewithal narrows. None

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<sup>5</sup>Keynes, op cit Chapter 22

too clearly, Keynes explained that the succeeding disinvestment of both in-place producing capital and finished inventory sets the stage for the eventual recovery.

Schumpeter's business cycle theory came before Keynes' General Theory as did a number of other ideas on the subject which won limited acceptance. In the early part of the last century when laissez faire thought was sweeping the field, Thomas Malthus espoused the view that the economy may try to set too much money aside as saving relative to investment and thus cause its demand to fall short of what has been produced, but his idea was given short shrift at that time. Later economists up to the time of Keynes identified maldistribution of income, periodically excessive investment leading to collapse, and in one case, changes in sunspot activity. Other economists, anticipating Keynes, focused on the incompatibility of bank credit, the level of output and the productive capacity of the economy.

#### 6. Monetary Considerations

It is all well and good to discuss the business cycle in the terms we have employed, but we cannot ignore the fact that a surge in output in employment cannot take place without the necessary changes in monetary conditions to make it happen. Then, too, certain changes in monetary conditions must occur in the downswing to set the stage for ultimate revival. Whatever increase in demand that is imposed on producing firms and whatever succeeding investment that results must be financed. There are three

principal ways in which increases in consumption and investment demand can be financed in the U.S. The Federal Reserve can increase the reserves of the commercial banking system thereby enabling them to offer the economy increased bank credit; the economy can speed up its use of the existing money supply; or the public, that is the individuals, producing firms and institutions in an economy, can turn in some of the currency in circulation to the commercial banking system. The latter is not associated in any relatable way to the business cycle so it is primarily by increased bank reserves and an increase in the velocity of the existing money supply that the upswing in the business cycle is financed.

At the trough of the business cycle, commercial banks very likely will have excess reserves to finance the initial stages of a resurgent economy, but in time they will have expanded credit to the limit of existing reserves, and to satisfy continuing demands for credit, must have added reserves. In the U.S., the Federal Reserve responds to the bank credit needs of the economy through expansionary open market operations. The resultant increase in bank reserves not only enables banks to finance increased economy activity at existing interest rates, but tends for a time to ease those rates downward. We will see in the chapters on economic policy lying ahead of us that the Federal Reserve has not always responded correctly to credit demands, and that there is conflicting evidence on the efficacy of increases in bank reserves by themselves as a means of encouraging increased economic

activity. Be that as it may, if the impetus for increased demand materializes, bank credit is necessary to sustain it.

One might ask, once new bank credit is injected into the circular flow what eventually becomes of it. The answer is that in the absence of any later recessionary trend dragging the economy back to its former business cycle trough, some of the increased bank credit becomes permanently embedded in the total money supply. This is easily enough understood when it is remembered that commercial bank demand deposits are part of the money supply. Thus, any increase in bank credit, being an increase in demand deposits (or for that matter, an increase in currency), is an increase in the money supply. But that is only a partial explanation of succeeding monetary events. Any bank loan matures and must be repaid or refinanced, and as income expands according to the multiplier and accelerator, so does saving by producing firms and individuals. For each sustained incremental increase in investment, generated saving will gradually displace the bank credit of the total necessary to finance periodically the sustained increase.

According to the investment multiplier, output expands to a multiple of sustained investment; according to the bank reserve multiplier, bank credit expands to a multiple of the increase in bank reserves. As the expansion takes place, saving is generated, and, of course, in actually become saving, is injected back into the circular flow as investment. As generated saving builds up, it eventually finances completely the sustained, current increment of investment. That is, as discussed in Chapter 6, saving eventually

equals planned investment, and further bank credit is no longer necessary; the economy is in equilibrium. However, that does not mean that the amount of bank credit built up in the expansion disappears; it is absorbed permanently in the circular flow as those originally borrowing for investment from banks, would turn to generated saving and use that saving increasingly in succeeding periods to finance the sustained level of investment. Let us not forget, too, that the process by which generated saving displaces bank credit to finance the sustained level of investment takes place primarily through the nonbank financial intermediation system.

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## ECONOMIC GROWTH

1. Elements of Growth

Chapter 1 of this text very early focused on the pervasiveness of capital and technology in the industrialized economy. The capital an industrialized economy has accumulated at any particular point in time is the result of all previous investment that has taken place. Obviously, we do not mean that each investment lives forever. As a matter of fact, we have seen that while capital is durable, it definitely has a limited life span. Capital is created, it is put in place and in combination with land and labor is transformed into goods and services. Little by little it is used up or depreciated and must be replaced. Concurrently, it may become technologically obsolescent as later vintages of capital are brought on stream which can produce the same output at a lower cost. We know, too, that consumer preferences in time relegate practically any product to the scrap heap of history. Capital being somewhat specialized may be rendered unwanted if its product no longer are desired by consumers. But whatever capital is in place at the moment helps point the way to improved versions which eventually take its place. Thus, there is an intertwined relationship among labor and capital and those who create it. Labor learns and becomes increasingly proficient in the use of capital, and those who invent and create capital learn from observing its combination with labor.



As we have seen, aggregate periodic investment is the sum of new additions to the stock of capital and replacement of depreciated capital. In our discussion of the circular flow of the economy and of the business cycle, we observed that there is a dual nature to investment. Expenditures for investment are part of total demand for output, and simultaneously those expenditures add to productive capacity enabling the economy to generate additional output and real income. Therein lies the definition of economic growth: increasing real income per capita in the economy. Capital adds to the productiveness of any given labor force so that for each unit of labor expended, a greater output of goods and services is achieved.

Concurrently in this process, labor in becoming more skillful through education and training adds to overall productivity. The increasing ratio of capital to labor furthers the growth process and an increasing labor force adds to the total output of which an economy is capable. However, we have seen in the last chapter that economic growth evidently does not proceed smoothly, but is subject to the vagaries of the business cycle. At the same time, productivity increases through continued accumulations of capital relative to labor would seem to have their limits. In this respect, various theories on economic growth are in opposition to one another in terms of where it leads. Before investigating the early classical, post-Keynesian and "doomsday" theories, let us review some basic microeconomic principles.

Investment is motivated by the anticipated excess of output value over the value of resources making the investment possible. In simplified terms, this is a reflection of the increasing returns in terms of output for successive increases in capital of one vintage combining with given levels of labor and land in a producing plant. But sooner or later continued increases in capital relative to the other factors come up against the law of diminishing returns, and the excess in output value relative to input, or marginal productivity, declines. In the face of continued capital increases, marginal productivity would fall to zero, and become negative. The phenomena of increasing and decreasing returns for increases in capital are illustrated in Figure 12-1(a) and (b).

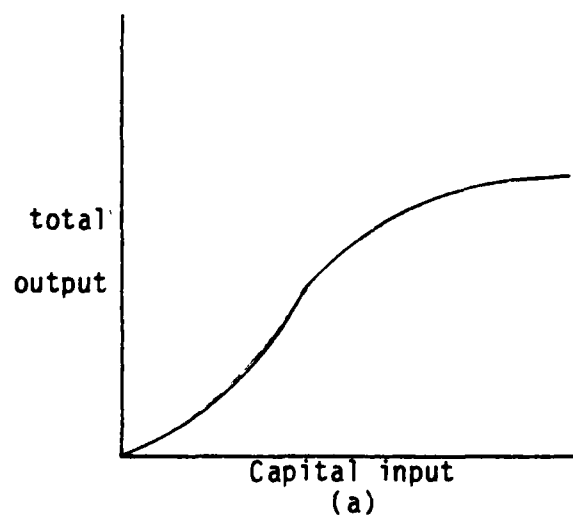


FIGURE 12-1(a). Productivity of capital combining with given levels of labor and land.

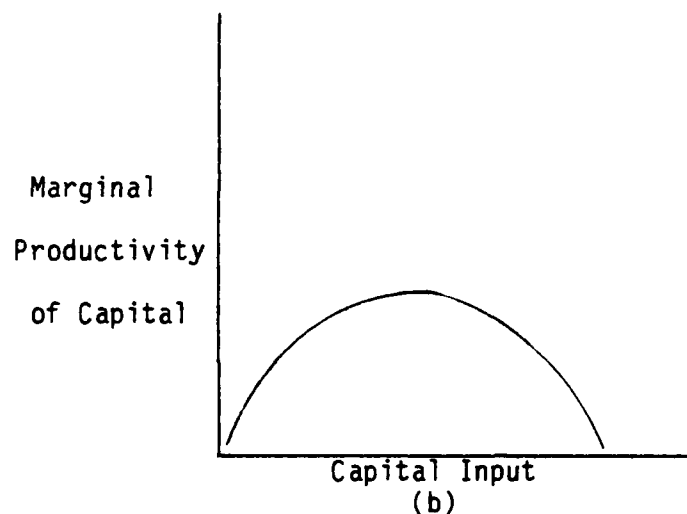


FIGURE 12-1b. Productivity of capital combining with given levels of labor and land.

We observe that the marginal productivity of capital (that is, the rate of change of output relative to the rate of change of capital) rises initially for increases in capital but then reaches a peak and falls, becoming zero where total output is at a maximum. Other things being equal, what applies to the individual plant applies to the economy as a whole. Thus, it would seem that the motivation for continued injections of capital into the productive base of an economy is of a very transient nature and that the accumulation of capital eventually must come to a halt. Yet we know from our own economic history that capital investment has not only persisted but has increased in absolute terms over the last two hundred years.

Three factors can account for the apparent contradiction. As we are already aware from what has been brought out in this

text, and from what the most cursory reading of history would tell us, the state of capital is not fixed but is subject on an almost continuous basis to advances in technology by which its productivity is being improved. This means that early vintages of capital are being added to with technologically improved later vintages, and in time the latter themselves are also being replaced with superior vintages. The advances that are incorporated into successive vintages of capital permit not only increased output at the same scale, but permit, too, scale increases by which further productivity gains can be realized. In our development from an economy of tradesmen, craftsmen and small farmers to an industrialized economy dominated by giant firms, those two aspects of technological advance have been evident.

But achievements in the ability to produce are not attributable to capital alone. Labor also plays its part, and apparently in the industrialized economy, increases in labor skills play as important a role in productivity gains as do technological advances. For any given state of technology, enhanced and employed labor skills bring about output increases, so that coupled with technological advances, they result in a higher rate of economic growth than would technology on its own. It is important to understand the full measure of labor skills. If technological advances are to be seized upon, labor skills must advance so that employed technological advance automatically means advanced labor skills.

But superimposed on those enhanced skills are the ongoing increases in labor's ability that experience brings. Thus, improving labor skills can be traced to the education that technology imposes on the labor force if it is to be employed and to its learning once it is employed. Labor's learning through experience translates itself into yet further technological advances.<sup>1</sup>

Managers of capital also learn. Part of technological advance is the improvement that is made in the efficiency with which capital and labor are combined with one another. Organizational changes are one way by which that sort of improvement is realized, and recombinations of input factors to production reflect attempts by managers and entrepreneurs to seize upon opportunities for potential improvements in productivity. Some recombinations are successful, others are not; but on balance advances are achieved. Recombinations are very closely associated with increasing scale and the specialization of labor that large scale operation permits. This is to say, even with a given state of technology, scale of production can be increased by rearrangement and recombination in which the distinctions in jobs performed by labor become increasingly clearcut. Where all economies of scale have been exploited, specialization can be carried no further and homogeneity of tasks is complete.

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<sup>1</sup>These fundamental concepts in the explanation of economic growth are to be found in greater detail in the references at the end of this chapter, and the reader is encouraged to explore them further for a fuller understanding of the phenomenon.

Studies which analyze economic growth in the United States and which attempt to identify the sources accounting for growth are in general agreement with one another. They confirm what is almost self evident, that average growth in total annual output is the result of growth in the labor force, growth in capital per person in the employed labor force, and progress in terms of technological advance, increasing labor skills and improving efficiency of factor combination. Robert Solow, Edward Denison, Simon Kuznets and John Kendrick have each separately identified the same basic sources of growth.<sup>2</sup> The underlying implication of their work is that increases in capital of a given technology relative to the labor force are limited in the increases in output per unit of input they can achieve.

Technological advance, increasing labor skills, improving efficiency of factor combination--these are the main ingredients of economic growth, but the process involves a very complex association and interplay of many elements. An equally necessary ingredient in economic growth is an ongoing development of the economic infrastructure, often referred to as social capital. As was pointed out, investment is a response to opportunity for profit, or in more general terms to opportunity for a return over and above

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<sup>2</sup>For different perspectives of the economic growth phenomenon, see, for example, Solow, R., "Technical Change and the Aggregate Production Function," R of Econ & Statistics, Aug 57, pp. 312-320; Kuznets, S., Modern Economic Growth: Rate Structure and Spread, New Haven: Yale U. Press, 1966; and Denison E. F., Accounting for United States Economic Growth 1929-1969, Washington DC: Brookings Institutions, 1974. Also, Kendrick, J. W. and Grossman E. S., Productivity in the United States: Trends & Cycles, Baltimore: John Hopkins U. Press, 1980.

the investment cost. Opportunities of that sort are enhanced not only by the increasing articulation of transportation and communications arteries, but indeed by a wide range of public investment that facilitates industrial life in terms of production, commerce, consumption and disposal. All that investment taking place in our own economy made possible a national market for the output of goods and services to the extent that economies of scale could be exploited by producing firms. At the same time, it accommodated the increased scale of production itself.

Naturally, the three fundamental ingredients of economic growth play their part in public investment, and as public facilities are put in place, much like private investment, succeeding vintages are improvements on earlier ones. As a matter of fact, our own short history is replete with examples of public stinting on expenditures for social capital that have had the effect of inhibiting increases in output, employment and real income. Public investment abets the expanding circular flow of the economy by improving the path, so to speak, from production to income to consumption to investment to production. In other words, as transfer costs are reduced and as the arena for exchange goods and services is enlarged, the real income and wealth of an economy increase in excess of the rate at which they would in the absence or at a lower level of public investment.

Concurrently with economic growth, there is general population growth. The world's population is growing and that of the industrialized economies also is growing. Some of those economies

are adding to their population more rapidly than others, and there appears to be no fixed relationship between economic growth and population growth.

## 2. Growth Process

Output of investment and consumption goods generates income. Investment adding to output capability results in additional generated income. Growth takes place. But generated income is not a shapeless lump reduced in haphazard fashion by all within the economy to demand for produced goods and services. We saw in Chapter 3 that there is a traceable apportionment of national income among the factors of production. Whether one chooses to believe that labor is compensated according to its marginal productivity or that institutional considerations determine the distribution of generated income, it is a matter of history in the U.S. that changes in labor's real wage have paralleled closely long-term movements in output. That is, increases in output have been translated into higher real wage levels.

Nevertheless, labor has achieved real wage gains by fits and starts. The imperfectly competitive nature of the industrialized economy and the recurring nature of the business cycle have precluded a development in which output grows absolutely period to period and real wages are adjusted in conformance with that growth. Rather, producing firms and industries experience changing demand for output and respond by adjusting production schedules and employment. Concurrently, too, they modify investment expenditures. Their labor costs are largely a matter of



negotiation. In industries dominated by organized labor, periodic collective bargaining determines contract wage and salary levels which remain in effect for stated time periods.

In those industries not dominated by organized labor, wage and salary negotiations take place, nevertheless, in their own fashion, so that there is a bargaining between producing firms and individuals of the labor force by which real wages are determined. Since changes in real wages over the short term are a matter of negotiation, it is easy to understand that at any particular time, real wage gains may be outstripping productivity gains; at other times, productivity gains may be outstripping real wage gains. Of course, the fact that the two probably only rarely are moving at the same rate precipitates the recurring bargaining for changes in money wages and salaries. Wage and salary bargaining are what affect the long-term correspondence between output and real wages. For the U.S., Figure 12-2 shows how close that correspondence has been since the beginning of the twentieth century.

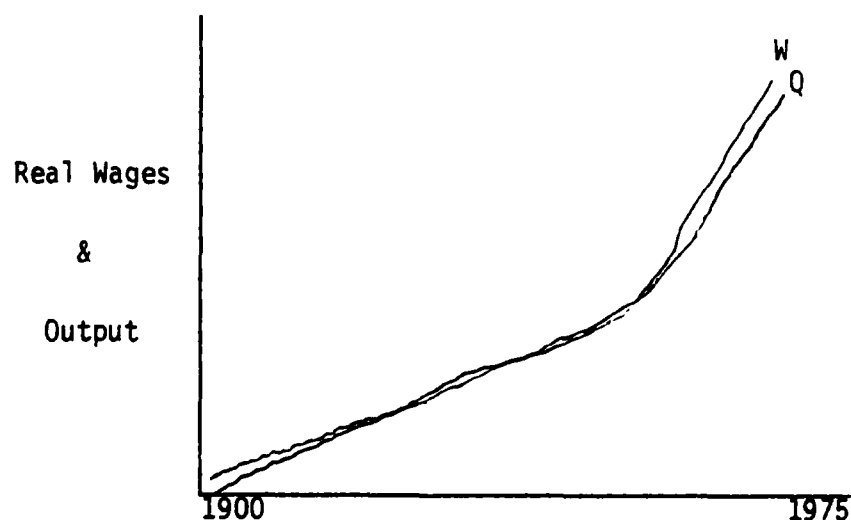


FIGURE 12-2. Long-term Trend in Real Wages and Output Per Unit of Labor

While the correspondence between the two is quite close, it can be observed that real wages have increased more than real output since the turn of the century. However, labor for the most part realized nearly all that difference in increase during the latter part of the 1930's and the decade of the 1940's. During that time, the federal government instituted new social and labor legislation which had the effect of noticeably adding to labors' real wage. Since that period of our history, labor's 70 percent share of national income has remained relatively stable, losing some ground momentarily then jumping ahead, but subsequently giving ground again.

### 3. Distribution of Income

It is thus the combination of circumstances of the moment and avulsions in social outlook that influence the direction that labor's real wage takes. In this respect, when output is increasing and employment is rising, demand for labor among producing firms intensifies. As the individual firm adds to its production force, it does not necessarily, and certainly not completely, draw from the pool of the unemployed. Of course, with the existing accumulation of productive capital, if aggregate output and employment are to increase, they can only be increased to the extent of the availability of the unemployed and new entrants into the labor pool. But it is the combined efforts of all producing firms to satisfy their individual production schedules that put them in conflict with one another, forcing them alternatively to offer increasingly improved wages to new hires or accede to

increased wage demands in on-going collective bargaining negotiations. Under these circumstances, labor's real wage very likely will leap out ahead of output gains.

The advantage is only temporary, however, and in the upswing of the business cycle, as producing firms' expectations meet increasingly with disappointment, production schedules are revised, output peaks out and new hiring slackens. Before long, unemployment is increasing, and in this time by virtue of reduced utilization of plant capacity and economies of recent vintage capital, the marginal cost to produce falls. However, total wage payments, paradoxically represent an increased proportion of diminished output. Thus, labor's share of national income in recessions and depressions is initially reduced as output expands and prices rise until expanded output is such that producing firms' demand for labor once again causes real wages to increase more rapidly than output.

In our own relatively short history, there has been only one major and seemingly permanent shift in the share of national income going to labor that has been forced on the economy by the federal government. The Wagner Act and Social Security Act of 1935, and other related labor and social legislation set in motion over the next fifteen years or so forces that were to bring about an improved share of national income for labor. In the past, there had been federal and state laws enacted that focused on working conditions and that in an indirect way added to labor's income, but whatever gains were made came out of increasing productivity. The

more recent turn of events came at the reduction of the return to capital. Since that time other labor and social legislation has been enacted seemingly improving labor's share of national income, but statistics suggest that other countervailing forces have been at work, the result of which has been that labor's share has remained relatively stable. As we learned in Chapter 2, the labor force of an industrialized economy is not wholly comprised of those individuals in the hire of producing firms; there are those who are self-employed, and we must recognize that the manner in which their real income changes modifies somewhat our perspective of the relationship of output and the real wage.

That part of national income not going to labor goes to the owners of producing firms and land.<sup>3</sup> Earlier in this chapter we saw that for increases in the ratio of capital to labor with a given state of technology, eventually a point is reached where the marginal productivity of capital begins to fall, and should the ratio continue to be increased, marginal productivity would fall to zero. But an examination of the relationship between capital and output as portrayed in Figure 12-3 reveals that their growth since the turn of the century has been at approximately the same rate.

The ratio of capital to output has been about three to one; it takes about \$3 of in-place capital to produce \$1 of output.

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<sup>3</sup>Obviously in the advanced economy, labor also is a part owner of capital and land through the savings of individuals in the labor force and through the claims they have on accumulated pension funds. Accordingly, those individuals in one way or another receive their shares of national income representing returns on invested capital and land.

Evidently, the combination of technological change, improved labor skills and improved efficiency in use of capital and labor have combined to push the production curve of Figure 12-1 upward and outward so that capital's marginal productivity curve instead of

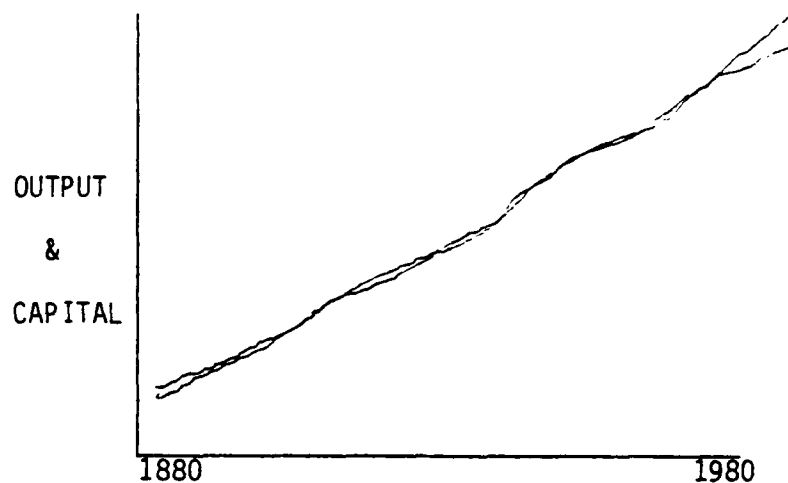


FIGURE 12-3. Growth trend of capital and output in the U.S.

ever falling has tended to remain relatively stable. This phenomenon is revealed to us in yet another way. The average of the long-term return on invested capital if shorn of entrepreneurial profits and losses, inflation premiums, and where earlier applicable deflation discounts, is remarkably stable. The annual average real return on capital is in the neighborhood of three percent. That is not at all surprising, since the average long-term growth of output is about the same. Should not the return on capital reflect the increase in output it makes possible? Indeed, it should, and were it not for the sources of economic growth discussed earlier, diminishing returns to increases in capital relative to labor would have long ago set in, and investment in capital would have come to

an end as the return on investment would have fallen to zero. Thus, if capital were to experience long-term diminishing marginal productivity, that trend would show up as a decreasing average return on in-place investment. In turn it would mean a gradual reduction in additional investment until no more at all was being made. Obviously quite the opposite has taken place; investment has not only not fallen off but has increased in absolute incremental additions.

#### 4. Changes in Labor and Capital

Is capital labor-saving or labor augmenting? The individual firm certainly replaces labor with capital whenever there is a reduction in costs to be achieved for producing output. But for the economy, the increases in real wages that labor has realized during the industrialization of the United States leave no doubt that the overall effect of successive accumulations of capital has been to augment labor in its ability to produce output. In other words, in spite of the cyclical undulations in unemployment, labor apparently has been the scarcer resource and has not become an unmanageable and surplus pool of valueless individuals. As labor has been released in some industries by investment in capital, the eventual impact has been a greater availability and employment of labor in those industries as well as others as the overall gain in productivity has been translated into an overall gain in demand for output. That is to say, those who are employed and become more

productive are paid more and in being paid more demand more. Their increased demand for goods and services translates into increased employment in those industries satisfying it.

That is not to say, however, that the process is not without pain. Labor replacement by individual firms reflect a technological obsolescence of those who are replaced and become unemployed. So although capital investment adds to the productivity of the employed labor force, those individuals forced into unemployment by the process must sometimes go through the agonizing process of updating their skills according to the changes in technological advance, or suffer the fate of wasting away for the rest of their lives. Yet even though some in the labor force are always in that transitional stage, total output per capital in the industrialized economy increases over the long term.

Some of technological unemployment, however, is due to the specificity and immobility of in-place capital. As mentioned in the last chapter, markets for goods and services, both consumer and investment, are shifting because of changes in consumer preferences, some of which are brought on by technological changes, and because of changes in investment patterns which are wholly brought on by technological changes. Population patterns also are fluid in consequence that capital put in place yesterday to satisfy their existing demand, may be idle today because of the lack of its adaptability for satisfying changed demand patterns and because it is not readily moved to new geographical locations in response to population shifts. Transient unemployment thus persists all the while

that the economy as a whole is adding to its total capital stock. Firms and industries rise, prevail and then pass from the scene in the midst of net accumulations to the capital stock.

## 5. Theories of Economic Growth

Economic growth is a complex process, and just as any other element of the industrialized economy its essence is not readily captured by formal representation. Nonetheless, a review of some of the better known models, however naive they may be, can be instructive and can provide one with a basic insight into the phenomenon.

One such model, embodying the assumptions of neoclassical theory, is based on the Cobb-Douglas production function which assumes a competitive economy, and capital and labor as the two homogeneous factors of production.<sup>4</sup> Accordingly,

$$(1) \quad Y = AK^B L^{1-B}$$

Where Y is output, A is technological factor of production changing with technology, and B is a positive fraction less than one.

We observe that the function is characterized by diminishing returns to increases in either factor, the other being held fixed. At the same time, we observe that there apparently are constant

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<sup>4</sup>See, for example, Miller, M. H. & Upton, C. W., Macroeconomics, A Neoclassical Introduction, Homewood IL: R. D. Irwin, 1974, pp. 29-38; and Allen, R. G. D., Macro-Economic Theory A Mathematical Treatment, New York: St. Martin's Press, 1968, pp. 211-215. For the Cobb-Douglas function, Douglas, P. H., The Theory of Wages, New York: Macmillan, 1934.



returns to scale for given A. That is, if both factors are scaled upward in the same ratio, output increases are proportionate.

Thus,

$$(2) \quad Y = f(K, L) = AK^B L^{1-B}$$

$$(3) \quad f(tk, tL) = A(tk)^B (tL)^{1-B} = tAK^B L^{1-B} = tY$$

The marginal product of capital is

$$(4) \quad \frac{\alpha Y}{\alpha K} = BAK^{B-1} L^{1-B} = \frac{BAK^B L^{1-B}}{K} = B \frac{Y}{K}$$

The marginal product of labor is

$$(5) \quad \frac{\alpha Y}{\alpha L} = (1-B)AK^B L^{-B} = \frac{(1-B)AK^B L^{1-B}}{L} = (1-B) \frac{Y}{L}$$

From (4) and (5) we conclude that the share of output distributed to each of the factors is constant even though diminishing returns are evident. For any level of capital, for example, share of Y claimed by capital is

$$(6) \quad Y_K = \frac{BY}{K} \cdot K = BY,$$

and for labor

$$(7) \quad Y_L = (1-B) \frac{Y}{L} \cdot L = (1-B)Y$$

We can see that growth is allowed for through the technological factor, A, in such a manner that it leaves the marginal productivities of the two factors unchanged. As Y increases as the result of increases in A, the share of Y going to each factor is unchanged; technology in the Cobb-Douglas function in other words is neutral.

The Cobb-Douglas function is associated with an assumption that the economy is in equilibrium at full employment, that is, planned investment equals saving out of the circular flow. Coupled with diminishing returns this assumption was at first interpreted to mean that the growth rate of the economy cannot be changed by an increase in the saving rate in order that the rate of planned investment increase. If investment is increased, the capital-to-labor ratio rises and diminishing returns set in. Thus, the growth rate although rising initially, sooner or later returns to its earlier value. What then is the growth rate of an economy represented by the Cobb-Douglas function? Investment or the growth rate of capital is limited by the rate of growth of output, thus in the long run, the two must be equal, and the rate of growth of output then simply is dependent upon the rate of growth in labor,  $L$ . Thus, it is not possible with the given assumptions to increase the growth rate of an economy. Later versions of the neoclassical theory of growth recognize the embodied nature of technological advance, and so increased saving in those versions making possible increased investment brings about a higher growth rate. Larger periodic additions to the in-place capital of an economy permit technology advances to outstrip diminishing returns and precipitate an increased rate of growth.

The assumption of full employment equilibrium is based on flexibility of prices and the substitutability of capital and labor for one another. Clearly in an industrial economy, prices are not

sufficiently flexible to provide for full employment of the two major input factors of production. According to neoclassical growth theory, as demand for and supply of the two vary, their prices adjust to clear their markets. In reality, the intensity of use for both capital and labor undergoes continual change. We have seen that the business cycle is a fact of life and that from its trough to its peak the use of capital and labor swells to near capacity and high employment, then as activity turns down their use recedes once more. All the while, as mentioned before, there is probably a substitution of capital for labor encouraged by technology advances which enhance the ratio of marginal productivity to price for capital relative to that of labor. At the same time, however, the price of capital is affected by changes in interest rates precipitated by the saving-investment process coupled with the demand for and supply of money. Thus, there may be pressures on employing firms to substitute labor for capital. The entire process simply does not work so efficiently that going wage rates and interest rates are clearing markets and maintaining the economy in full-employment equilibrium. We have the record of undulating unemployment ratio and plant capacity to confirm this observation. The full employment assumption causes neoclassical theory to err yet further since it must deal with capital-labor substitution in terms of investment as opposed to the tradeoff that would take

place with flexible prices between existing capital and labor. Yet the neoclassical theory does not incorporate an investment function.

Thus, we may remark that neoclassical theory captures part of the reality of industrial life. There are advances in technology, there are diminishing returns to increases in one factor, the other held fixed, there is substitution of capital for labor and labor for capital. On the other hand, the efficacy of factor price flexibility, to the extent that it exists, is not so strong that full employment of factors is assured; adjustments to changes in market conditions take time. In summary, neoclassical theory seems to say, given these recognized tendencies in the use of labor and capital, this is the way an economy should grow; it does not explain how an economy in reality does grow.

The Domar dynamic model referred to in the last chapter is more attuned to Keynesian philosophy and focuses on the concept that the industrialized economy has an equilibrium rate of growth determined from the three basic relationships of the equality of planned saving and planned investment, a fixed marginal propensity to save, and the desired capital-to-output ratio.<sup>5</sup> In developing his model, Evsey Domar makes the assumption there are no lags in the transformation of generated income into consumption demand, and

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<sup>5</sup>Domar, E. V., "Expansion and Employment," American Economic Review, Mar 47, pp. 34-55.

into demand for capital goods through the saving-investment process, and a simultaneity between incremental investment and the resulting expansion of output through the multiplier. Another assumption is a constant price level. Heroic assumptions, to say the least. Domar developed his model in seeking to find "the conditions needed for maintenance of full employment over a period of time, or more exactly, the rate of growth of national income which the maintenance of full employment requires." Domar looks upon employment as a function of the ratio of national income to productive capacity. Accordingly, where  $\sigma$ , as a positive fraction less than 1, represents the increase in productive capacity for each dollar of invested capital,

$$\Delta Y = I \sigma$$

On the other hand, as we know, incremental investment not only increases output capacity incrementally but is the source for increases in income through the multiplier process,  $\frac{1}{\alpha}$ , where in Domar's terminology,  $\alpha$  represents the marginal propensity to save. Thus,

$$\Delta Y = \Delta I \frac{1}{\alpha}$$

Equating the two, increase in supply or productive capacity to increase in demand we have,

$$I \sigma = \Delta I \frac{1}{\alpha}$$

or

$\frac{\Delta I}{I} = \alpha \sigma = G$ , the rate of growth necessary to maintain increasing productive capacity fully employed. If there were to exist full employment equilibrium with demand for output equal to output capacity, the increases in capacity resulting from recurring investment would have to be matched by like increases in demand for capacity output. Thus, income,  $Y$ , must grow at the same rate as investment. Accordingly,

$$\frac{\Delta Y}{Y} = \alpha \sigma$$

As is shown, the equilibrium growth rate  $G$  turns out to be the ratio of the marginal propensity to save,  $\alpha$ , to the capital-to-output ratio,  $\frac{1}{\sigma}$ . The model emphasizes that investment not only adds to current demand but increases the productive capability of the economy. In restatement, while it encourages current employment, it requires increasing demand for output if full employment is to be achieved in the future. The increasing productivity of the labor force brought about by recurring periodic investment means that a greater absorbed output is necessary in future production cycles if all in the labor force are to be employed. This means that in order for the growth rate to increase not only must total demand rise but it must rise at an increasing rate. Apparently this requirement introduces an instability to which the economy is vulnerable.

Excessive investment leads to yet further investment as the output of capital goods made possible by saving (restrictions on consumption) falls short of investment demand. The satisfaction of investment demand cannot exceed the economy's ability to produce; so as long as investment demand is made possible by bank credit, an explosive inflation results. Alternatively, investment falling short at any particular time of that needed for full employment will precipitate successively dwindling investment leading to catastrophic depression. On inquiring why demand for output may not keep pace with increasing ability to produce or may exceed it, we are led back to Keynes' proposition that intended investment may differ from saving, and that changes in the disposition to hold money will affect demand for output. But we saw in the last chapter that there are limits to how far an economy will go in recession and in expansion.

Obviously, the Domar model no more than the neoclassical model captures fully the phenomenon of economic growth. It seems particularly naive in its assumption of the absence of lags and a constant price level. In this respect, the model fails to bring about an association between economic growth and the business cycle, the motivation for the author's development in the first place. R. F. Harrod preceded Domar in developing a Keynesian growth model.<sup>6</sup> The two are not at all dissimilar in their

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<sup>6</sup>Harrod, R. F., "An Essay in Dynamic Theory," Economic Journal, Mar 39, pp. 14-33.

propositions. However, Domar's model focuses on what must be the conditions for dynamic equilibrium while Harrod focuses on what would have had to be the conditions for achieved equilibrium. Harrod introduces a term, warranted growth rate, which in his words is, "that rate of growth which, if it occurs, will leave all parties satisfied that they have produced neither less nor more than the right amount." That rate, accordingly, will precipitate itself, but a departure from the rate for whatever reason will be "self-aggravating" and have calamitous consequences.

The vulnerability of the industrialized economy to depressed stagnation was emphasized by earlier Keynesian economics. By that view, it was held that the amount of saving at full employment exceeded that needed to finance planned investment in the mature economy because capital becomes increasingly capital replacing. That is to say, there is an apparent limitation on the demand for output, and as succeeding capital vintages replace less efficient in-place capital, the demand for new capital falls. Resultingly, there is a chronic tendency in this view towards deficiency of demand. The conditions of the 1930's were such that the demand deficiency view underpinned the economic policy of the federal government in the U.S., and the central government of other industrialized economies.



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## MONETARY POLICY

1. The Supply of and Demand for Bank Credit

The text has emphasized the circular flow of economic activity and the central role commercial banks play in facilitating that flow. We have seen that with a given amount of bank credit the public at large and nonbank financial intermediaries bring about the transformation of money set aside out of the income flow into mainstream demand. If the flow of money into the banking system and nonbank intermediaries is equal to the flow out, the velocity of money remains constant. That is, average balances in various accounts the public has with all depository intermediaries, banks and nonbanks alike, do not vary and consequently the turnover of the money supply does not change. Money, in other words, does not stack up as idle balances. We have also observed that the rate at which the money supply turns over varies as the changes in the level of idle balances take place from time to time. Although it is becoming more and more blurred, there is a distinction in the manner in which balances in checking accounts in commercial banks vary and the way in which balances in nonbank intermediaries vary. For example, in deciding to decrease its balances in commercial banks, the public is either increasing its average level of expenditures or increasing its balances in nonbank intermediaries. If it is the latter course of action the public takes, as we saw in

Chapter 9, the intermediaries, as the public's agents, may very well act to increase the overall average of balances throughout the intermediation system by holding some of their increased deposits in the form of increased idle balances. The public, of course, by increasing its balances with nonbank intermediaries thinks it is saving some of its income. But the amount by which the economy increases its saving in terms of intended investment depends upon how much of increased public saving in this manner the intermediaries actually transform into intended investment by way of purchases in new capital stock issues or loans made to producing firms. If the nonbank intermediaries do not bring about a complete transformation of increased deposits into intended investment, their own balances increase, and the turnover of the money supply slows down with a consequent reduction in demand for goods and services.

On the other hand, if nonbank financial intermediaries do effect a full transformation, the velocity of the money supply remains the same, and apart from economic growth engendered by investment, produced output will be absorbed by consumer and investment demand. Providing intermediaries create yet further credit for the economy, output, employment and income will reflect the impact of ongoing investment on GNP.

Intermediaries, as we know, are limited in their ability to expand credit by the excess reserves they may possess from time to time. The reserves of a commercial bank that is a member of

the Federal Reserve System are comprised of cash in its vaults and deposits with its Federal Reserve bank. The reserves of a non-member bank are comprised of cash in its vaults and deposits with other designated commercial banks. Accordingly, we can see that the intermediation system can find itself in possession of excess reserves if for some reason or other the public decides to reduce its holdings of cash, or if there is a transfer of funds from demand deposits to time deposits. The reserves of the system can also be increased by increases in its deposits with the Federal Reserve banks. Those deposits increases, we know, result when the Federal Reserve Open Market Account buys more outstanding U.S. Treasury debt in the open market than it sells and pays for what it buys with checks drawn on the 12 district banks.

Excess reserves constitute a means to increase the money supply. As we have seen, by virtue of our fractional reserve system, any incremental increase in excess reserves can be translated into a multiple increase in credit and the money supply. In this respect, we should reemphasize the distinction between the supply of bank credit at any one time and changes in that supply. We should stress, too, that banks continue to predominate in the popularly defined version of the money supply. As the circular flow of economic activity takes place, commercial bank loans are continuously being extinguished throughout the banking system, and at the same time are being renewed, or alternatively, new loans are being created. Given the reserves the banks are required to have and the reserves they do have, other things being equal, the banks

have a finite supply of loanable funds. In the absence of any action on the part of the public to reduce their holdings of currency, under the Monetary Control Act of 1980, the banks as a system can induce a reduction in the level of demand deposits and an increase in time deposits by offering higher rates of interest in competition with other financial intermediaries. Individual banks, of course, can realize excess reserves by selling off investments; however, one bank's gain in this respect becomes another's loss.

But the supply of bank credit can and does vary as the Federal Reserve deliberately changes the reserves the member banks have. As we will see, the commercial banks and the Federal Reserve System frequently are working against each other in seeking to change the supply of bank credit. That is, at times when demand for bank credit is high, banks try to accommodate demand by increasing their supply; very possibly, the Federal Reserve will be operating to restrict the supply of bank credit. At other times when demand for bank credit is relatively weak, commercial banks may lower interest rates to use up excess reserves; at those times, the Federal Reserve will likely be increasing reserves through its open market operations.

Thus, we see that just as in the market for any commodity there is an interaction in the marketplace between supply and demand credit. That interaction determines the price of credit, or the bank interest rate which in turn diffuses itself throughout

the market for loanable funds. The supply of and demand for bank credit in static terms can be depicted as in Figure 13-1.

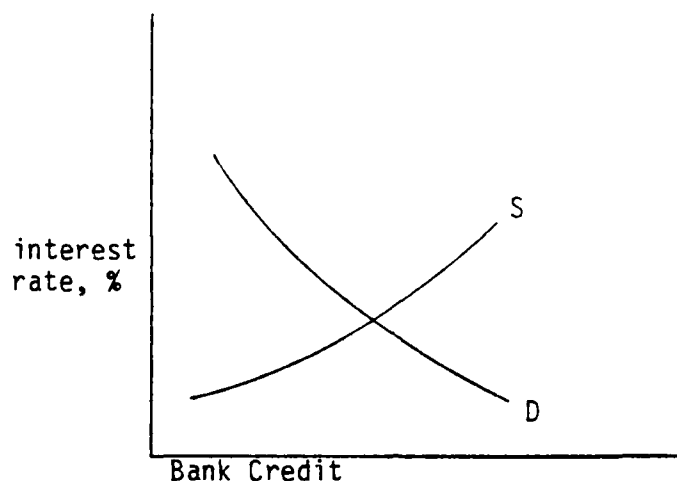


FIGURE 13-1. Bank Credit Supply and Demand

Let us make sure we understand how the money supply can be varied, and for the sake of simplicity let us continue to focus on the commercial banking system. In the absence of Federal Reserve action to increase or decrease member bank reserves, and in the absence of changes in the holdings of currency in the hands of the public, the commercial banks are limited in their ability to expand bank credit. Basically, to increase their ability to expand credit, that is, to increase their excess reserves, they must transform some of their demand deposits into time deposits. This they can do by raising interest rates they pay and by expanding their offerings of time deposit devices. But we must not forget they do

so in competition with nonbank intermediaries. If they succeed in transforming deposits in this way, they increase their excess reserves by virtue of the lower reserves required on time deposits in comparison with demand deposits. We know, of course, that the ensuing expansion of credit takes time.

So it can be seen that there is a rising supply curve for bank credit, or what is the same thing, money. Thus, if there is an upward shift in the demand for bank credit it can be satisfied at higher interest rates.

At any particular time, then, there is an interest rate structure which will equilibrate the supply of and demand for bank credit. We refer to a rate structure as opposed to a single interest rate because of various rates associated with differing maturities to time deposits banks can create. Now then, if there is a shift in either direction of either or both of the curves, that is, if the demand for credit shifts, if the supply of credit shifts or if both supply and demand shift, the amount of outstanding credit will change as will the interest rates. As a prelude to our discussion of monetary policy let us ask ourselves, what the conditions are by which demand for bank credit changes. We recall that commercial banks satisfy commercial and industrial demand for credit and consumer demands as well. Thus, we can anticipate that commercial and industrial demands for bank credit are conditioned by the level of business activity. If output in factories increases, if retail sales increase, if industrial activity

in general increases, demand for bank credit has shifted upward and has been satisfied otherwise activity could not have increased.

The reasons for increased economic activity can be found in changed consumer propensities, business anticipations and changes in government fiscal programs. Consumers for a variety of reasons may change their preferences with respect to present and future consumption. Any change that increases the propensity to consume now would tend to increase the demand for bank credit, while at the same time reduce time deposits and increase the level of demand deposits. Those consumers with time deposits would transform them in to demand deposits to pay for increased consumption of goods and services, while other consumers would seek bank credit in the form of demand deposit increases. On the other hand, when business and industry respond to increased consumer demand or anticipate increased demand for their output, their demand for bank credit increases in order to finance inventory and production increases. Naturally, in responding to increased demand for output, they finance some of their long-term credit needs by selling capital stock and bonds to the nonbank financial intermediaries and the public at large.

Let us reiterate that in the context of the circular flow of the economy when demand for bank credit increases, as we have characterized it, initially the flow of money out of the banking



system exceeds the flow into the system. But eventually, as Figure 13-2 shows, other things being equal, in static terms, an equilibrium will be struck between demand and supply.

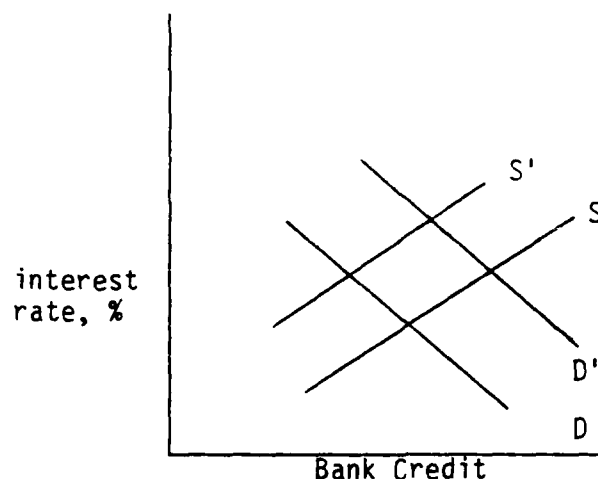


FIGURE 13-2. Shifts in Bank Credit Supply and Demand

This is an important point. Later on we want to consider it further when we examine the impact that increases in prices and wages have on shifted bank credit supply and demand curves. We can see that to satisfy increased demand for credit, in the face of a tendency for time deposits to fall and demand deposits to rise, banks must offer higher interest rates if they are to supply a greater amount of credit.

At the same time, as Figure 13-2 implies, we must be aware that the two curves are not independent of one another. What in effect takes place is that as the demand curve for bank credit shifts upward, the supply curve automatically must also shift upward. This is because as time deposits are drawn down for any given interest rate there will be a lower level of deposits. Thus,

in responding to increased demand for credit, commercial banks will be moving up a rising supply curve that itself has shifted upward. The equilibrium rate of interest so to speak for supply and demand is thus higher than it would be if the two curves were in fact independent of one another.

In the absence of action on the part of the Federal Reserve System or on the part of the public to reduce their cash holdings the only source for an increased supply of bank credit is the amount by which idle bank balances are reduced. Thus, as pointed out earlier, banks must coax a transformation of some demand deposits into time deposits out of depositors. The banks can do this only by offering higher interest rates.

From this, we can see that there is an intimate relationship between economic activity, the money supply and bank interest rates. This is nothing more than a repetition of what we have already said. There is an equilibrium of output and employment occasioned by the equality between what is being set aside out of income flow and what is being fed back into the mainstream of demand for goods and services. If at any particular time there is a balance between the two with a certain level of idle balances in the commercial bank system, the money supply to finance an increased level of output and employment must come from a reduction in idle bank balances.

## 2. The Control of Credit by Monetary Authority

The Federal Reserve System is our central bank and as such has what appears to be overwhelming powers to control credit

conditions in the economy particularly since the Monetary Control Act of 1980. We saw in Chapter 10 that the System is organized into 12 district banks and their branches which respond to the needs of the member commercial banks in their respective districts. The individual Federal Reserve Banks do indeed minister to the needs of member banks and to the rest of the intermediation system, but for the most part the work amounts to routine implementation of policy decisions.

The real authority and control over monetary aggregates and interest rates is exercised by the Board of Governors. It is governors who set the policy which determines the general level and trend in credit conditions throughout the economy. We must emphasize, and we will dwell on this in some detail, credit conditions in the economy are like a two way street. There is an interaction between the economy and the Federal Reserve in that each is generally responding to the other in one way or another. At the same time, we must keep in mind that neither the private economy nor the Federal Reserve move in isolation of the taxing and spending of the federal government.

The Board of Governors has as its primary objective monetary and credit conditions which foster a high level of output, employment and economic growth with a prevailing stability in prices and wages. It has seldom been successful in the pursuit of

that objective. It is thwarted in achieving its objective because of undulations in private investment, changes in the velocity of money, the specificity and complementarity of industrial resources, changes in consumer preferences, changes in federal fiscal policy, and the impact that the business cycle has on the implementation of its credit policies.

We learned in Chapter 10 that the Federal Reserve effects its policies through selective credit controls and general credit controls. As already explained, the latter now consist of its power to establish legal reserves of all financial intermediaries, to establish conditions by which intermediaries may borrow from Federal Reserve banks, and to buy and sell federal government securities in the open market.

By far the most potent of its three general instruments of monetary control is its open market operations. It is the buying and selling of U.S. Treasury securities that enables the Federal Reserve System more than anything else to approach as closely as it does to those general credit conditions it seeks. Open market operations are conducted for the entire System, that is, the 12 district banks and their branches, in the Federal Open Market Account located in the Federal Reserve Bank of New York, and under the management of a vice president of that bank. The manager of the account is subject to the general guidance of the Federal Open Market Committee.

As we pointed out in Chapter 10, the Federal Open Market Committee is made up of the seven governors and the presidents of

five Federal Reserve banks. The governors and the New York Federal Reserve Bank president are permanent members of the committee while the other bank presidents serve for one year on a rotating basis.

The FOMA buys and sells U.S. Treasury securities in order to change the reserves of the intermediation system so that desired changes will take place in the money stock and interest rates. By far most of its activity relates to limiting unwanted changes in member bank reserves caused by changes in currency held in the hands of the public. In essence these defensive operations are the result of seasonal fluctuations in economic activity. The FOMC meets about every three weeks in Washington DC to review credit, employment and output conditions and to assess the need for changes in FOMA operations. It considers the rate of change in the money stock in relation to what it should be, in its judgment, to achieve output and employment targets. On the basis of its review and assessment, the committee issues written, general guidance to the FOMA manager in his supervision of open market operations.

The Federal Open Market Committee has its origins in the problems faced by the Federal Reserve System in controlling bank credit conditions in the aftermath of the post World War I boom. In those days the Federal Reserve adhered to the real-bills doctrine by which it responded to the demand for bank credit by discounting commercial paper brought to its 12 district banks by the member bank system. In this way, it exerted control over monetary and interest rate conditions by the degree to which it would accommodate request for discount loans from member banks.

Following the collapse of the boom in 1920 and for several years thereafter the United States experienced a steady flow of gold imports. The effect of this gold flow was to reduce substantially the control that Federal Reserve banks exercised over member credit through the rediscount mechanism. As member banks accumulated increasing amounts of gold, they depended less and less on borrowings from Federal Reserve banks for increased legal reserves on which to base credit. The 1920 depression itself, of course, reduced the need for member banks to borrow from the Federal Reserve banks. The reduction of member bank loans led the Federal Reserve banks to seek alternative interest bearing assets. Resultingly, they increased open market purchases of U.S. Treasury securities. They soon realized that open market purchases caused an expansion of the money supply by virtue of increasing member bank legal reserves in the same way that borrowings or increases in gold did.

Accordingly, in 1922 the Board of Governors created a committee made up of four governors to coordinate the open market activities of the 12 banks. In the following year, the Board replaced that committee with one made up of five governors with centralized and direct supervision of open market operations for the 12 banks.<sup>1</sup>

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<sup>1</sup>For the study on the birth of open market operations in the Federal Reserve System, see Meyer, M., The Bankers, New York: Weybright & Talley, 1974, pp. 401-402.

Over the years, the FOMA has gradually become the principal means by which the Board of Governors exercises control over general credit conditions in the economy. Today FOMA operations dominate money market activity in the economy. As of June 1982, the FOMA held the following U.S. securities in its portfolio:

U.S. Treasury Bills	\$47.9 billion
U.S. Treasury Notes	60.9 billion
U.S. Treasury Bonds	<u>18.1</u> billion
Total	\$126.9 billion

This portfolio amounted to approximately 17 percent of the \$764.0 billion marketable U.S. debt. Together with a \$11.1 billion gold stock, \$9.0 billion in federal agency securities, \$1.6 billion in loans to intermediaries, a float of \$2.5 billion and about \$4.8 billion in other assets, the FOMA was supplying about \$168.7 billion of Federal Reserve credit to the economy through the member bank system. That is, that supply of credit was absorbed as approximately \$20.2 billion in intermediary reserves, \$134.2 billion of Federal Reserve Notes, \$1.3 billion in deposits, other than member bank reserves with Federal Reserve Banks, some \$3.6 billion of U.S. Treasury cash holdings and deposits, and \$4.8 billion of other liabilities. All of this can be incorporated as part of the Federal Reserve banks' condition statement for June 1982 as shown below:

<u>Assets</u>	(in \$ billions)	<u>Liabilities</u>	(in \$ billions)
U.S. Treasury Securities	126.9	Federal Reserve Notes	134.2
Intermediary borrowings	1.6	Intermediary reserves	20.2
Gold certificate account	11.1	U.S. Treasury gen account	4.1
Federal agency obligations	9.0	Deferred availability cash items	7.1
Cash items in process of collection	9.6	Capital accounts	1.0
Other assets	8.8	Other assets	2.1
	<u>168.7</u>		<u>168.7</u>

Federal Reserve Banks' Condition Statement as of June 1982.  
Source: Board of Governors of the Federal Reserve System, Federal Reserve Bulletin, July 1982.

At the end of 1922, the 12 Federal Reserve Banks held \$600 million in direct obligations of the U.S. Government. The enormous increase in holdings since then, as we can see, has been translated into a vastly increased money supply. That is, member bank reserves of \$22.8 billion back up most of the \$212.1 billion in total commercial bank deposits. Eighty-one billion 700 million dollars of the \$92.6 billion of outstanding currency is nothing more than the amount of Federal Reserve notes issued directly or indirectly for Federal Reserve purchases of U.S. Treasury securities.

It is easy to see that the Federal Open Market Committee can bring about changes in money supply growth by its guidance to the FOMA. The account operates in the open market through a network of some 20 dealers in New York City. If it seeks as an objective to increase the rate of growth in the money supply, it



superimposes increased purchases on its relatively routine defensive operations of responding to seasonal changes in money needs. It pays for its purchases with Federal Reserve checks that become deposits in the intermediation system which in turn reserve accounts with Federal Reserve Banks or increase currency in the hands of the public. In this respect, it makes no difference from whom the FOMA buys the federal securities. If a commercial bank is involved as a seller, the bank simply is trading one of its assets for another, and winds up depositing the Federal Reserve check into its reserve account with its Federal Reserve Bank. Its legal reserves increase while its other reserves have been correspondingly decreased. A multiple increase in the money supply based on the increase in legal reserves can take place.

If an individual or nonbank firm is involved as a seller, the immediate effect is an increase in the money supply by the amount of the sale, and an increase in legal reserves reduced by the reserves necessary to back up the deposit of the Federal Reserve check. A multiple increase in the money supply based on that increase in legal reserves can then take place.

When the Federal Reserve System increases reserves in this way, the intermediation system is motivated to increase loans or to put the excess reserves to work, so to speak. Given no change in the demand for credit, the intermediaries can expand bank credit, or, in other words, the money supply only by offering credit at reduced rates. Thus, we see that one immediate effect of Federal Reserve action to increase reserves is an increase in the money

supply at a reduction in interest rates. However, when we consider the sustained growth in member bank reserves at a more rapid rate than growth in national output, we will see that continued interest rate reductions will be improbable. Falling interest rates will be of very limited duration if they do materialize as inflationary pressures on wages and prices exert themselves and spill over into money market conditions.

If the FOMA seeks as an objective the decrease in the rate of growth of the money supply, it superimposes decreases in its rate of accumulation of federal securities on its routine, defensive operations. The effect of such a restrictive move is to reduce the growth of intermediary reserves, or conceivably eliminate increases in reserves or even reduce reserves.

As the FOMA sells federal securities from its portfolio, buyers pay for the securities with checks drawn on the inter-mediation system. In collecting the checks, the Federal Reserve Banks will cause a reduction in reserve accounts or intermediary vault cash. The effect will be to reduce the system's ability to offer credit.

A mildly restrictive campaign by the Federal Reserve will mean a reduced rate of growth in credit. A more restrictive campaign means a standstill in the availability of credit, or even a reduction in credit. Under such circumstances, given that no change occurs in the demand for credit, the immediate effect will be a rise in lending rates and interest rates in general.

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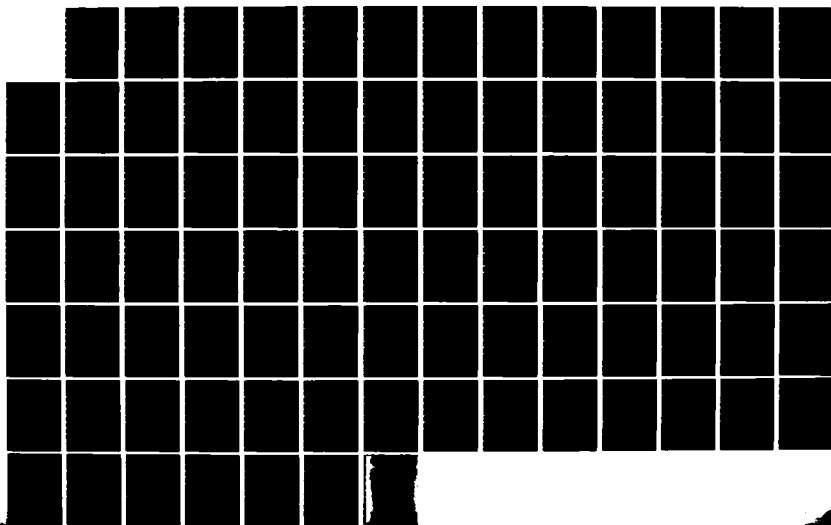
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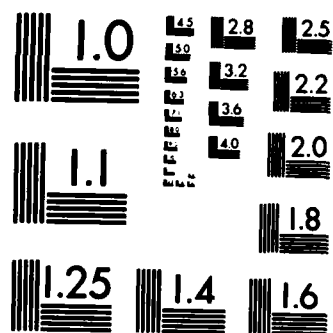
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### 3. Discount Loans and Legal Reserve Changes

In the face of a restrictive monetary policy, individual intermediaries find that reserves necessary to support their deposits slip away from them. Consequently, to maintain and adjust their loan operations to the new realities, they seek out new sources of legal reserves. One source available is the discount facility operated by the 12 Federal Reserve Banks and their branches.

As we have seen, intermediaries are required to maintain their reserves for deposits at the legal limit as an average measured over a one week period. For practical purposes, the reserve requirement is lagged by two weeks.

Accordingly, when, as the result of FOMA operations, intermediaries find that their reserves may not average out to the legal requirement on average deposits for the reserve statement week, one means they have of remedying their possible deficiency is to borrow reserves from Federal Reserve banks. Discount loans are contracted for a two week period or less and are renewable at the option of the Federal Reserve. Actually an intermediary has the option of selling some of its business loans to its Federal Reserve bank in order to increase its legal reserves. Federal Reserve banks will rediscount industrial, agricultural or commercial paper with a maturity of not more than 90 days at the time of discount on the indorsement of a member bank. But because of the administrative awkwardness of the rediscounting procedure, member banks

used it only infrequently in the past. It is much more convenient to borrow on a promissory note and pledge U.S. Treasury securities as collateral.

Although originally, the Congress and the Federal Reserve System which it created considered the discount policy of the Federal Reserve banks to be the primary means to control general monetary and credit conditions in the economy, today, the Board of Governors employs that policy as an adjunct to open market operations. In this respect there are three things that should be understood about the discount policy. First, borrowed money, regardless of its source is a means for a bank as for any intermediary to increase its profit so long as it can lend at higher rates than it borrows. Consequently, individual institutions may very well try to borrow from Federal Reserve banks in order to increase their own lending capabilities. Second, so long as it is profitable for them to do so, they will continue to borrow in the absence of constraints limiting their use of the discount mechanism. That is, in the absence of a restrictive open market policy, individual institutions might well be motivated to borrow and continue to renew borrowing from the Federal Reserve banks. Third, the Board of Governors considers the discount policy a means by which intermediaries can adjust to implemented open market operations and not a source to be continually available to augment lending power.

Consequently, the Federal Reserve according to its own statements discourages borrowings by member banks except to adjust

to "unusual situations." In order to make its policy effective, Federal Reserve banks scrutinize in increasing detail the financial statements of institutions which borrow and attempt to renew borrowings over an extended period of time.

To reinforce the use of "moral suasion," the Board of Governors adjusts the rate of discount applicable to loans to fit the circumstances. Thus, if the Board wants to signal that credit is excessive and more restrictive monetary conditions are approaching, it will order the discount rate raised. Once restrictive open market operations have been implemented, the Board adjusts the discount rate according to the speed with which it wants the intermediation system to adjust.

The rate of discount and the relative willingness of Federal Reserve banks to make and renew discount loans strongly influence the ways in which all intermediaries use alternative sources for legal reserves. In the face of high discount rates and restrictive discount loan conditions, individual intermediaries have two basic alternatives. An intermediary can sell off some of its secondary reserves and reduce the amount of new loans and loan renewals. Alternatively, it can try to attract new deposits. As a third and more or less last resort, it can borrow on a very short-term basis from other intermediaries through what is called the

federal funds network or by other means.<sup>2</sup> But eventually, the impact of restrictive monetary policy must be absorbed; the individual institution's ability to extend credit will be curtailed. As a system, the financial intermediaries cannot evade the impact of restrictive conditions by selling off secondary reserves because one institution's increase in legal reserves achieved by this response will be some other's loss in legal reserves. The effect of adjusting to restrictive reserve conditions in this way will simply be higher interest rates in general as the money market responds to changed demand conditions for debt securities. By the same token, The Board of Governors also uses discount policy to complement the easing of monetary conditions by open market operations. The Board lowers the discount rate to signal a change in monetary policy and to encourage institutions to borrow and expand credit while embarking on expansive open market operations.

The Board of Governors also changes legal reserve requirements for intermediaries in order to implement changes in monetary policy. When legal reserve requirements are raised, intermediary ability to make credit is restricted; when requirements are lowered, intermediaries can expand credit. The Board makes changes in reserve requirements rather infrequently, relying instead on

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<sup>2</sup>At any one time in the Federal Reserve member bank system, some banks are almost sure to have excess reserves while others may need to bring up their average reserves to required levels. The latter can do this by borrowing from those with excess reserves, and some do but usually for only several hours or at most for a day or so. Banks which have reserves to lend, of course, want to earn interest on them.



open market operations and discount policy to implement overall monetary policy. One reason for this seems to be that intermediaries by and large look upon reserves as idle funds that otherwise could be earning profit. But changes in legal reserve requirements have the same "announcement" effect that discount rate changes have. Accordingly, the Federal Reserve uses changes in reserve requirements to announce and introduce changes in monetary policy to the general public and intermediation system alike. Thus, increases in legal reserve requirements presage more restrictive monetary conditions ahead. Decreases in requirements suggest growth in total reserves.

#### 4. Summary

In the foregoing paragraphs, we have observed that the Federal Reserve System has three primary means of regulating general monetary and credit conditions in the economy. We have also seen that discount policy and legal reserve requirements complement and supplement open market operations rather than stand by themselves as effective measures of control over bank credit. In simple terms, open market operations, discount policy and legal reserve requirements are the means by which the Federal Reserve restricts or increases the ability of the intermediation system to offer credit. We earlier remarked that commercial banks were the focal point of monetary and credit transactions in the economy. Money and credit work themselves in and out of the banking system as goods and services are traded within the economy. Thus, the action on the part of the Federal Reserve System to tighten or

loosen its reins on member bank and nonbank credit eventually will be felt throughout the financial intermediation system. Naturally, the impact on the financial intermediation system will be absorbed by those who use it. As we will discuss shortly, changes in Federal Reserve policy sooner or later manifest themselves, at least partially, as changes in national output, employment, prices and income.

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## MONETARY POLICY AND THE RESPONSE OF THE ECONOMY

1. Targets For Monetary Policy

The Federal Reserve System Board of Governors seeks ultimately to promote economic growth and high employment with wage and price stability. It cannot, of course, make changes directly in those ultimate targets of public policy. Instead, it seeks to encourage conditions leading to real income growth by operating on those variables over which it has a measure of control. As we have seen, those variables are monetary aggregates and money markets conditions.

Since Federal Reserve open market operations can affect most directly the reserves of financial intermediaries, obviously those reserves are one monetary aggregate watched closely and for which the Board of Governors sets targets of growth. Since 1972, the Board has refined the reserves target by subtracting from total reserves, those required to back up interbank deposits and U.S. Treasury tax and loan accounts. Thus, the reserves target is comprised of those reserves required to support private deposits (SPD).

But the reserves of intermediaries are the basis for credit and the money supply. The definition of the money supply according to the Federal Reserve comes in various guises. The popular version known as M1, consists of currency held by the public plus demand deposits held by the public and other checkable deposits of all depository institutions plus travelers' checks. An

expanded version of the money supply is M1 plus savings and small time deposits at all depository institutions, money market mutual fund shares and other intermediary liabilities that have a quality of "moneyness" to them and the potential for financing demand for goods and services.<sup>1</sup> Yet further expanded versions include additional intermediary liabilities with lesser degrees of "moneyness." Obviously, the money supply in its various guises is an important monetary aggregate on which the Board of Governors focuses in setting and implementing monetary policy. We have seen that time deposits and changes in the level of those deposits play an important role in the circular flow of the economy. Consequently, time deposits are yet another monetary aggregate, changes of which carry an important meaning to our monetary authority. Such liabilities as money market mutual fund shares also are of interest to the Board of Governors since their level is indicative of the availability of long-term credit relative to the total supply of credit for the economy. Institution reserves, demand deposits and currency in circulation, time deposits, money market mutual fund shares--these are monetary aggregates, the changes of which in comparison with changes in real output and employment confirm the relative efficacy of current monetary policy.

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<sup>1</sup>Intermediary liabilities other than checks drawn on demand deposits do not ordinarily accommodate business transactions, but the fact that they are readily convertible into currency or deposits on which checks can be written makes them very much like money.

Movements in monetary aggregates, however, are not by themselves trustworthy indicators of changes in the movement of the circular flow of the economy. When changes take place in the supply of and the demand for credit, interest rates will be affected. Given the demand for credit, changes in reserves will have an impact on lending rates as intermediaries seek to employ increased reserves, or as they must adjust to reduced reserves. Any change in reserves brought about by open market operations will affect more than just bank lending rates, however. If reserves are reduced or inhibited from growing as rapidly as before, lending rates will rise, certainly, but under such conditions, some intermediaries will react by seeking out additional reserves wherever they might find them. Thus, federal funds rates are certain to rise. By the same token, some will sell off securities they hold as we have discussed, causing interest rates in the general money market to rise. In competition with one another, financial intermediaries, in the face of tightening monetary policy will raise the interest rates on time deposits they pay.

The effect of restrictive policy, then, is to raise interest rates. We can visualize that the effect of an easing monetary policy probably will be to lower interest rates. Thus, it is apparent that not only changes in monetary aggregates result when the FOMC engages in nondefensive open market operations but changes in interest rates take place as well. Consequently, the Board of Governors through open market operations and on occasion changes in legal reserve requirements seeks what it considers beneficial changes in not only monetary aggregates but money market conditions as well.

All the while that it is exerting monetary policy the Board relates what is taking place in prices of goods and services, and in employment to changes in monetary aggregates and interest rates. If, for example, it observed M1 increasing while other components of M2 were decreasing at the same time that interest rates were rising and the price level was holding steady, the Board would probably be inclined to follow an expansionary open market policy. The changes would suggest to it that consumer demand were increasing at the expense of long-term credit and investment, but that overall demand was not in excess of what the economy could produce. A moment's reflection should convince the reader that policy making and implementation is an art and cannot very easily be explained in either Keynesian or Monetarist terms. Both those views if examined carefully add to one's overall grasp of monetary affairs, but each tends to assign primer book responses to the economy and advocates rather dogmatic policy measures.

In Chapter 7 we saw that there is a transactions demand for money that varies directly with the change in income. At the same time, there is a speculative demand for money that varies inversely with the change in market interest rates. The way in which demand for money, or the velocity of money varies, has an impact on the efficacy of monetary policy. As we have remarked, the ultimate targets of public policy are employment, income, prices, wages and economic growth. Given that saving-investment takes place out of current income, economic growth, or perhaps better said, capacity to produce, is automatically expanded. But, the relationship

between the change in the money supply, and changes in employment and output determines whether or not economic growth takes place with price stability. Short-term disparities between demand for produced output and the amount of that output dictate the rate of change in the general price level.

## 2. Gaging the Effectiveness of Monetary Policy

The Federal Reserve seeks to manipulate reserves in such a way that the money supply grows at a rate compatible with the changes in employment and output. Observe that we refer to money supply growth relative to employment and output change. We know that in the short run, employment and output may rise or fall as the business cycle follows its inexorable undulations, but money wages and prices tend to move upward if at all.

It is the undulations in the business cycle that tend to generate changes in the velocity of money. Velocity changes in turn impede the achievement of targeted movement in monetary aggregates and interest rates that the Federal Reserve seeks.

At a time when output is low relative to capacity, and unemployment is high, the Federal Reserve may seek lower interest rates to foster increased demand for output and credit. Open market operations mopping up U.S. Treasury securities result in increased reserves, but interest rates instead of falling conceivably may very well stay where they are as sellers of U.S. Treasury securities simply increase their bank balances and ignore other offerings of debt. In Keynesian terms this is the liquidity



trap that a depressed economy finds itself in. The money supply increases but the economy continues to wallow in high unemployment.

On the other hand, at a time when output is high relative to capacity and unemployment is low, the Federal Reserve may seek to reduce the availability of commercial bank credit by limiting growth in reserves through open market operations to forestall upward movement in money wages and prices. However, given that there are accumulated idle deposit account balances, commercial banks and nonbank financial intermediaries seek to draw out those idle balances by offering claims against themselves at increasingly higher interest rates. Financial intermediaries seek to tap those idle balances because under conditions of high employment there is an exuberant demand for short- and long-term credit. Consumers and business seek short-term credit; investment seeks long-term credit. Higher interest rates entice money out of idle balances and the velocity of the money supply picks up. The process is essentially that idle demand deposits become time deposits in commercial banks and claims against nonbank financial intermediaries.

By virtue of the transformation of some demand deposits into time deposits, intermediaries find themselves with excess reserves on which a money supply expansion can take place. Observe that although this process as we discussed in an earlier chapter provides the system with excess reserves, it causes an immediate reduction in the money supply,  $M_1$ . While idle demand deposits that owners transfer to nonbank financial intermediaries become demand deposits in banks once again, they do not remain idle for long. Instead, the intermediaries loan those newly acquired amounts to

investors seeking claims on real assets. All this means that movements in the circular flow of the economy are subject to misinterpretation by the Federal Reserve. Additionally, there are lags in the identification of movements in the economic system as well as lags in the response of the financial intermediation system to action on the part of the Federal Reserve with respect to reserve changes.

In terms of the I-S, L-M curves of Chapter 7, it is easy for us to see how the Board of Governors, relying too heavily on either monetary aggregate changes or changes in money market conditions, can misinterpret what it observes. If it were to rely on the money supply as a monetary instrument of control in isolation of interest rates, changes in the velocity of money might diminish its effectiveness. For example in Figure 14-1, if an expansionary monetary policy has a given money supply as a target, the L-M curve could be shifted leftward by an increase in liquidity preference on the part of the public.

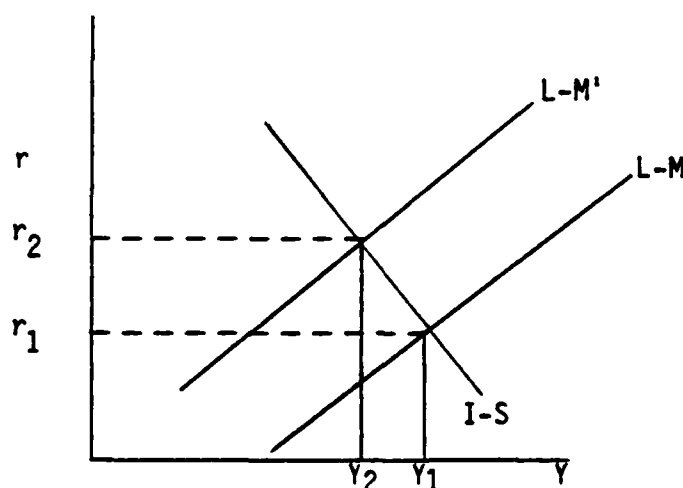


FIGURE 14-1. Shift in the L-M Curve

This would lead to a fall in output and national income as the economy backed up the I-S curve in response to higher market interest rates.

Alternatively, if the Board of Governors centered on interest rates as a gage of monetary policy effectiveness, it can also be subject to error in its interpretation of interest rate movements. This can be seen in Figure 14-2 where a leftward shift in the I-S curve as the result of say a fall in the demand for investment results in lower interest rates.

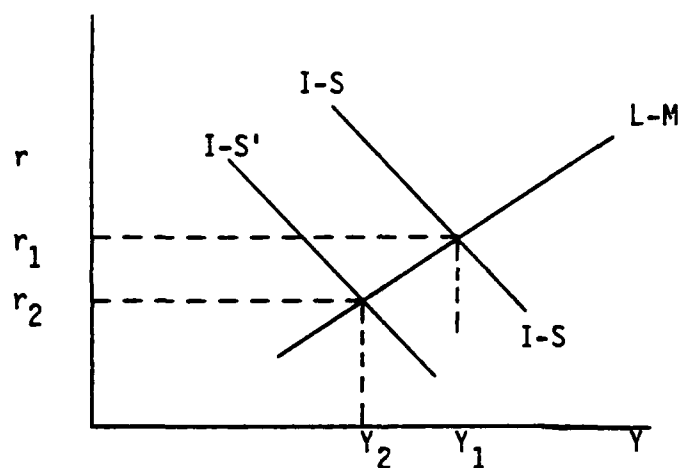


FIGURE 14-2. Shift in the I-S Curve

Although it may be apparent in the face of falling interest rates that monetary policy is expansionary, quite the opposite is true.

In earlier times, the Board of Governors relied to a great extent on money market conditions as a gage of policy effectiveness, but as the inadequacy of interest rates as indicators of effectiveness became more and more apparent, the Board by the mid-1960's began relying increasingly on monetary aggregates to

guide it in the application of open market operations. By the mid-1970's, the Board was setting ranges for money supply growth in combination of ranges for interest rate movements as targets to be achieved.

### 3. Another Look at the Response of the Economy

We have seen that the Monetarists and the Keynesians constitute the two dominant schools of thought in this country on macroeconomics. The basic difference between them with respect to monetary policy lies in the divergent views they hold on the velocity of money. The Monetarists consider the velocity of money to be a reasonably stable function of income, while the Keynesians look upon velocity as a function that fluctuates in the short run. Accordingly, the Monetarists contend that the general response of the economy at less than full employment to an increase in the money supply is a like increase in national income. As the Federal Reserve increases the money supply through open market operations, the public increases its demand for goods and services to bring the ratio of money balances to income back to what it was before the increase in the money supply. This in turn sets off a multiple expansion of the money supply with increasing output and employment as first prices of securities rise, interest rates fall and then investment rises. Thus, according to their view, it is easy enough for monetary policy appropriately implemented to stimulate the economy towards higher levels of production, employment and income from depressed conditions. In effect, as we have seen, the Monetarists look upon the L-M function as an inelastic one. As

shown in Figure 14-3, an increase in the money supply shifts the L-M curve rightward and results in greater income and lower market interest rates.

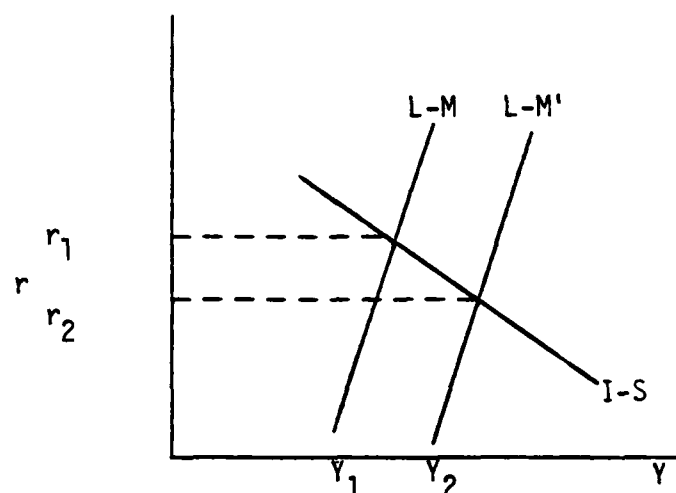


FIGURE 14-3. Monetarist impact of an increase in the money supply.

According to the extreme Keynesian view, however, given depressed conditions of employment, income and output, attempts by the Federal Reserve to improve conditions by increasing member bank reserves will fail as the economy trades U.S. Treasury debt for Federal Reserve checks which it simply adds to its idle balances. The Keynesians look upon the L-M function as highly elastic when output and income are low. Thus, as shown in Figure 14-4, an increase in the money supply produces little if any discernable effect on depressed conditions.

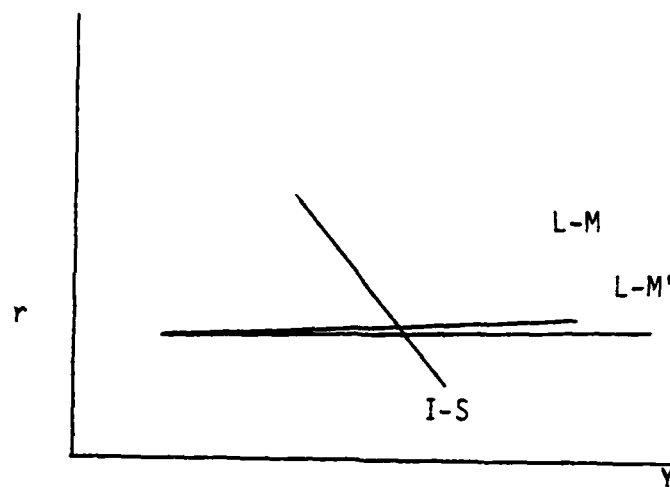


FIGURE 14-4. Keynesian impact of an increase in the money supply.

Idle balances grow, interest rates may soften, and income and output change but little. The income velocity of money slows down. Keynesians, in effect, say that if expansionary monetary policy is to achieve results in depressed times it must lower interest rates to encourage investment, but because of liquidity preferences in the face of already relatively low interest rates, yet lower interest rates are unlikely.

The discussion of monetary policy in this chapter is more in sympathy with the Keynesian view than that of the Monetarists. Experience suggests that substantial short-run changes do occur in the velocity of money. Idle balances fluctuate according to the level of market interest rates. But, as has been brought out in this chapter and earlier chapters, the movements in the money supply are part of a complex pattern of activity in the circular flow of the economy.

In times of depressed conditions, the excess reserves that intermediaries find themselves with as the result of expansionary open market operations may go into already existing securities instead of short-term loans because of the lack of demand for the latter. The former may offer the more profitable alternative.

The trade that intermediaries make of excess reserves for existing securities, as we have earlier brought out, partially reduces the public's holdings. The transformation of excess reserves into new loans increases the demand for output. That part of excess reserves traded for existing private debt, of course, does not disappear from the system but simply is shifted around within it, as the public trades its holdings of private debt for increased money balances.

The money supply expands by a multiple of excess reserves created by the Federal Reserve, but only by virtue of the increased demand for output of goods and services resulting from the part of excess reserves going into new loans and investments. Given the demand for loans and investment money, if intermediaries are unwilling to lower interest rates, it is conceivable that a Federal Reserve expansionary policy may have little if any impact on ultimate targets of employment and output. The money supply increases in the face of increased reserves, the velocity of money slows down, and demand for output may or may not increase. Thus, the expansionary effect of Federal Reserve open market operations may be dampened by three factors. Holders of U.S. Treasury debt may feel interest rates are as low as they might be in the foreseeable

future. Consequently, they will be willing to trade U.S. Treasury debt for Federal Reserve checks and add those checks to balances without running the risk of buying alternative private debt and suffering a later capital loss. The public may trade its increased transaction balances for short-term, interest-bearing obligations of intermediaries. But those intermediaries as the public's agents may very well be of the same mind as the public and be reluctant to expand their credit. Thus, money velocity slows down under such circumstances, and the multiple expansion cannot take place to the degree hoped for by the monetary authority. At the same time, among the public at large and producing firms, confidence in the future buoyancy of the economy may be impaired with the result that demand for short-term credit shifts downward. Commercial banks, too, instead of seeking to expand short-term credit by lowering interest rates may simply use part of their excess reserves to buy already existing securities.

In times when credit is creating an aggregate demand for goods and services that exceeds the economy's capacity to produce, restrictive open market operations will result in dwindling reserves, but as we have seen, intermediaries and the public at large tend to thwart for a time the effectiveness of monetary policy under such circumstances.

Banks will try to attract time deposits from nonbank intermediaries; but, even if they are successful, the end result will still be a reduction in the money supply. They may increase their borrowings at their Federal Reserve banks; however, their use



of borrowings to supplement reserves sooner or later will be abrogated. Intermediaries may attempt to supplement dwindling reserves by selling off holdings of securities to the public, but unless the public pays for the private debt with currency, the intermediaries as a system, cannot possibly do so. The intermediation system as a whole eventually must submit to the Federal Reserve's tightening noose.

In sum, the effect of tightening Federal Reserve monetary policy in a dynamic economy, then, is to slow or halt money supply growth, raise interest rates, reduce demand for output of goods and services, and depending upon the severity of the policy, possibly reduce employment.

#### 4. Inflation

An ultimate objective of monetary policy is a stable price level. Obviously, if output and employment are high, inordinate increases in the money supply through Federal Reserve open market operations would very quickly be translated into increased credit and in turn demand for goods and services exceeding the economy's capacity to produce. Prices would rise. Both Keynesians and Monetarists agree that inordinate increases in reserves in times of high output and employment translate themselves quickly into rising prices and wages, and if sustained, into escalation of price and wage rises.

It would appear easy enough for our monetary authority to maintain a stable price level by a practiced control of reserves. Monetarists, in fact, advocate that the Federal Reserve maintain a

steady rate of growth in the money supply in keeping with the potential growth rate of the economy itself.<sup>2</sup> In the monetarist scheme of things, velocity is a stable function, and changes in demand are occasioned by changes in the money supply. The rate of inflation is directly related to the rate of growth of the money supply. Thus, to maintain stable prices, the money supply should grow at a rate such that demand can just absorb the increased output that investment makes possible.

But the limitations of in-place productive plant in the expansionary phase of the business cycle combined with increasing competition for labor and other resources by producing firms cause prices and wages to rise, and set in motion the intensified struggle between producing firms and labor as consumers for shares of output. Thus, when relatively high employment is reached, that struggle has already been reflected in a spiral, so to speak, of rising prices and wages which put increasing pressure on demands for credit by the economy to carry out its day-to-day transaction. Firms accede to higher wage demands, borrow money to meet their increased expenses, and post higher prices in the hope of covering increased costs. Consumers, in turn, not all realizing wage boosts concurrently, borrow money, too, in order to meet the increased cost of living, and demand higher wages and salaries. So it goes.

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<sup>2</sup>The premier spokesman for monetarists, of course, is Melton Friedman. His views expressed in a variety of ways are reprinted in There's No Such Thing as a Free Lunch, Open Court Publ. Co., 1975.

The banks and other financial intermediaries experience increasing demand for credit, and as the price level rises, offer credit within their capacity to do so only at rising interest rates. The Federal Reserve Board of Governors has as one of its targets high employment and accordingly tends to accommodate at least initially increasing demands for credit through a continued expansionary policy. But that policy forces it to feed reserves into the system on which the money supply grows increasingly greater relative to output. The result is that the price level *cr* rise so long as policy supplies credit-making capacity to the financial intermediation system, and interest rates concurrently rise as lenders in terms of the public and the intermediation system demand and get an inflationary premium for making credit available.

We have seen there is a tradeoff between *employment* and inflation. The severity of inflationary price rises depends upon the extent to which the Board of Governors is willing to let prices rise to maintain high employment, the impact that external shocks have on the output of the economy, and implemented fiscal policy of the federal government.

For the United States, the events of the last two decades which have influenced price levels and employment, have been the changed terms of international trade to its disadvantage in the face of world recovery from WW II, the federally mandated investment in environment protection, the dramatically increased cost of imported crude oil, the Viet Nam War, expanded social welfare

programs and a surge in the labor force as the result of the post WW II baby boom. The recovery of much of the world with whom we trade from the ravages of WW II required us to give way in what we got for what we were selling to it. Thus, the changed terms of trade impinged on real income of the consumer in this country. At the same time, the investment we have made in environmental protection since 1970 has resulted in a higher cost to produce a given quantity of final goods and services. To that cost was added the increased cost of energy which, of course, is being paid for by a greater transfer of claims to our output to oil-producing suppliers abroad than before. Viet Nam, as any war, caused the destruction of resources that we otherwise might have used for other purposes.

Superimposed on those shocks to our economy were the expanded social welfare programs of the federal government which as income redistribution measures, impinged on the real disposable income of most of the employed labor force. All of these events in one way or another translated themselves into increased demands for credit for a given level of output in comparison to what would have been credit demands in their absence. Whatever one may believe about the flexibility of prices and wages, in the face of impingements on claims to shares of output, monetary policy has the alternatives of encouraging high employment and accommodating a price spiral, or accepting high rates of unemployment and attempting to maintain price stability. In the latter choice, if the economy is sustaining shocks from without as the U.S. has in the last two decades, the cost of price stability would be very, very dear.

With a changing demographic profile reflecting substantially increasing labor force entrants, as in this country in recent times, the task of limiting unemployment while maintaining price stability is a formidable one, indeed.

One might puzzle over the way in which changed terms of international trade causes inflationary pressures in an economy. We discuss international trade and payments in Chapter 15, but we can have some understanding of the problem now by reflecting on the fact that international trade is accommodated by a monetary exchange system just as domestic trade is. When changes in what one country demands from the rest of the world relative to what the rest of the world demands of it, the exchange rate of their currencies changes. Thus, if demand for a country's output falters, that country must exchange more of its currency for the foreign currencies it needs to buy goods and services it wants from the rest of the world. In other words, it is transferring claims against its own output that it would have retained for itself prior to the change in demand. Typically, each entity involved in the importing of foreign goods and services will seek additional credit to carry on day-to-day business anticipating that it will be able to pass on the additional cost of buying imports. The individual will seek higher wages, the producing firm will pass higher prices. It is here where monetary policy takes center stage. To avoid a downturn in demand for some of the economy's output that increased import prices cause, it can and typically does respond by expanding the intermediation system's credit-making ability.

The reader might think that the changed terms of trade simply result in a lesser volume of imports and a greater volume of exports at the expense of those who having to pay more for imports now get less of domestic output, with no need for additional credit, and that there should be no impact on the price level. But experience tells us otherwise; consumers will seek a redress of lost real income and firms will incorporate increased costs into higher prices. Barring an increase in the money supply, lessened domestic demand for some of the country's own products means less employment. Now, of course, the increased volume of exports can be expected to increase the employment level in industries affected thereby affected. But in the end, the country will have lessened real income, and pressures will surface to make up for it. Entities in the economy will seek to recapture lost real income or to avoid its loss in the first place and the route they follow in higher wage demands and higher posted prices reflects itself in increased demand for credit.

As it is, in the absence of any monetary accommodation the price level would rise; but a sustained rate of increase would be possible only with money supply expansion. Without expansion, once the initial impact of changed terms of trade ran its course, the price level for this reason would rise no more.

The multiple increase in the price of imported crude oil that took place in 1973 and again in 1979, precipitated upward pressure on prices and wages much in the same way as other changes in the terms of trade caused. So long as monetary policy responded

to increased pressures for credit, the seesawing back and forth in price and wage increases continued. As it was, in 1973, the economy had been experiencing a sustained business expansion from the depth of the 1970 recession, and the Federal Reserve was becoming increasingly wary of the pressures that typically build up in the expansion phase of the business cycle. It apparently was not strongly disposed to expand very significantly the credit-making ability of the financial intermediation system. By mid-1974, it had implemented a severely restrictive policy which together with other factors brought on the 1974-1975 recession.

Earlier, in 1968, the Johnson administration began a massive buildup in our military forces in Viet Nam and chose to finance the increased expenditures by deficit. The U.S. economy already was at practical full employment with the unemployment at slightly less than 4%. The pull of deficit-financed demand superimposed on already existing demand was bound to have inflationary consequences. But those consequences materialized only because of the accommodating Federal Reserve monetary policy. That policy in effect turned the 1968 and 1969 deficits into money. As the expansion in credit took place, price and wage rises followed apace. Only when the Federal Reserve turned to a restrictive policy in 1970 did the rate of inflation slow. The policy was restrictive but not sufficiently restrictive to bring price rises to a halt. Part of the reason was the growing numbers of unemployed in the face of sustained credit demands now being generated by the nascent environmental protection programs.

Beginning in the late 1960's, the U.S. economy financed a federally mandated program in environmental protection. The program involved the expenditure of billions of dollars invested in plant and equipment and consumer products to remove pollutants being discharged into the air and water. The investment added to the cost to produce output hence in itself caused prices to rise. As with the changed terms of international trade, the increased cost to produce our output precipitated the need for additional credit. Increases in the U.S. money supply until the middle of 1974 clearly reflect the accommodation of credit demand by the Federal Reserve System.

Prior to moving on to fiscal policy, let us consider briefly the selective credit controls the Federal Reserve System employs from time to time.

#### 5. Selective Controls

In employing open market operations, discount policy and changes in legal reserve requirements as general credit controls, the Federal Reserve causes changes in total credit suppliable to the economy. The Federal Reserve also can affect the composition of credit by means of selective credit controls which limit the duration and the amount of credit for consumer installment purchases, corporate security purchases and real estate mortgages.

In times past, the Board of Governors has been authorized by Congress or the President to impose limitations on in the areas referred to. Because of the stock market debacle in 1929, pursuant to the 1934 amendments to the Federal Reserve Act, the Board was



given the power to set margin requirements on corporate securities listed on the national exchanges. Since that time, the Federal Reserve has imposed maximum percentages that can be borrowed by individuals and firms buying securities.

During World War II, President Roosevelt signed an executive order empowering the Board of Governors to set maximum lengths of time for repayment and minimum down payments for consumer installment credit. Allowed to lapse after the war, the controls were reinstituted for a while during the Korean War.

In 1950, Congress gave the Board of Governors the additional power to control credit on new residential construction. The Federal Reserve accordingly imposed minimum down payment and maximum times for repayment on new residential purchases. Its authority in this respect was withdrawn in 1952.

Controls on consumer and new residential credit have as their primary purpose the limiting of credit in order to control demand. In controlling demand in those two areas, the Federal Reserve was limiting the use of resources that would otherwise be required for war purposes.

While the Federal Reserve System, in the past, has adjusted the composition of credit by restricting its availability to consumers, home buyers and stock market activists, the Executive Branch of the federal government adjusts the composition of credit in a very different way. There is a myriad of federal agencies which have as their primary purpose the subsidization of credit for particular sectors of the economy. The various agencies involved

in specialized credit primarily act as marshalling forces of available credit so that they in turn can offer or guarantee credit to agriculture, business and real estate at lower rates of interest than would otherwise be available to those sectors. Federal credit agencies undoubtedly benefit the sectors that make use of them, but they do not necessarily increase the total amount of credit available.

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## FISCAL POLICY

1. Government Intervention

The revenue that a central government realizes from its taxation system together with any money it borrows, and the expenditures it makes with those funds in anticipation of affecting economic conditions constitute implementation of its fiscal policy and a primary means by which government intervenes in the economy. That aspect of government taxing and spending is intertwined with the more basic character of government. The fundamental purpose of taxing, borrowing and spending of government is to provide public goods and services in satisfaction of identified needs. In the United States and in other industrialized economies of the world, government demand for goods and services represents a major part of aggregate demand for GNP. As brought out in Chapter 6, our federal government translates what it buys into public goods and services, the need for which the financing for which have been articulated in federal law. At subsidiary levels of government much the same process takes place.

In some countries, intervention by centralized political authority has meant the almost complete take-over by government of the means of production. In those countries, a market exchange exists between consumer and producer. But there, the central government leaves nothing for the economy to decide for itself, and instead dictates what the output of consumption and capital goods

will be, what wages and salaries of the labor force will be and what the prices of produced goods and services will be.

In political democracies, the central government derives its authority through the electoral process, and its efforts in seeking to resolve the problems associated with the industrialized economy are the outgrowth of legislation and executive policy decisions. Those efforts are formalized into programs and whatever the objectives of those programs may be, to provide goods and services the private market cannot or does not, to redistribute income, or to stabilize prices and employment, their execution requires that expenditures be made. In providing goods and services, the central government well might buy them from the private market or with the means of production in its own hands produce them itself. Whatever takes place, the process of capital accumulation goes on.

The intervention that the federal government of the United States has increasingly exercised in the private economy is manifested by its control of business practices, its labor legislation, its programs to subsidize investment in particular industries, its defense expenditures, its programs in health, education and individual welfare, its agricultural subsidies, its energy and environmental programs, its transportation and regional development programs, and a host of other activities. Expenditures of the federal government amount to more than 20 percent of Gross National

Product. In 1927, expenditures of the federal government amounted to only about four percent of GNP. In slightly over 50 years, that was a five-fold increase.

Central government spending as a percent of total national output is similar in other noncollectivist industrialized economies.<sup>1</sup> The money to cover these expenditures comes from tax revenues and from time to time, borrowings. That money would very probably otherwise exert itself as a demand in the marketplace directly for a combination of some of the very goods and services government provides and other ones. But we observe that government expenditures also take place to provide goods and services that by their nature would otherwise be absent in our economy.

## 2. The Character of Public Goods

The relatively meager role that the federal government played in the economy changed dramatically with the Great Depression. In the space of a few years, the Franklin D. Roosevelt administrations initiated a number of programs, since built upon, what were to thrust the federal government irrevocably into the arena of economic affairs not only as a regulator of certain aspects of business and industrial behavior but as a major participant in terms of demand for output of goods and services.

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<sup>1</sup>In socialist economies where government owns the means of production, the percent of total national product going to satisfy government demand for capital goods that in other economies is manifested by the private sector. In the economies of France, Germany, Japan, and England, government expenditures for one reason or another approximate the same percentage of national output of goods and services.

The programs instituted by the federal government in the Great Depression were brought into being for two basic but distinct reasons. They were in part a reflection of the Keynesian philosophy that the industrialized economy floundering in high unemployment could be extricated therefrom only by massive government spending to add to existing demand and thereby induce an expansion of output culminating in substantially increased employment. That is, the federal government by its fiscal policy should compensate for deficiencies in demand for full employment output that might exist from time to time. The programs also extended the responsibility of the federal government for satisfying social capital and social welfare needs previously ignored for all practical purposes in this country.

The Roosevelt Revolution was really the beginning of the gradual integration of the federal government and the private economy. In recent years because of the continuing concentration of practically all aspects of economic behavior and because of the problems created by our rubbing elbows more closely together, the federal government has extended its encroachment on the economy into previously untrammelled areas.<sup>2</sup> The marketplace still exists but the conditions under which it operates are more and more dictated by public policy, and it is that policy in the aggregate which determines the real shares of national output going to labor, business and industry and to those who make their money

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<sup>2</sup>For a readable account of the evolution of fiscal policy since the Herbert Hoover administration, see Stein, H., The Final Revolution in America, Chicago: University of Chicago Press, 1969.

available for others to use. It is true that in the last several years, the federal government has loosened its grip on industries which it has regulated such as communications, transportation and financial intermediation. But, simultaneously it has added to its authority in other areas.

There is not necessarily a direct link between the benefits resulting from government programs and their costs. In this respect, whatever the federal government does, what results therefrom is a good or service intended to provide a benefit for particular sectors of the economy or for the economy as a whole. In a limited number of federal programs, goods and services can be priced and accordingly, those unwilling to pay the price can be excluded from consumption. Still other programs are so unique in character that goods and services resulting therefrom provide benefits for a particular sector of the economy, and accordingly the cost to provide the goods or services are paid for by revenues collected as excise taxes. Some programs, on the other hand, provide goods or services which are merited by and benefit one sector of the economy, but because of an inability to pay on the part of the beneficiaries, the program costs are defrayed by general revenue, that is, revenue coming from income taxes. Such programs constitute transfers of income in which one sector is subsidized by other sectors of the economy and accordingly bring about a redistribution of income from what otherwise exist. Most federal expenditures, however, finance programs which provide collective goods or services the nature of which is such that they are

consumed in equal amounts by all to whom the goods or services are made available, and one person's consumption does not impinge on that of another.

Collective goods, being what they are, do not lend themselves to the price system, and in providing them, the government cannot exclude anyone from their consumption. Accordingly, costs of collective goods and services are defrayed by general revenue emanating from the income tax system, which being a progressive one, is based on the ability-to-pay principle. That principle recognizes that there is a greater ability to pay for public goods and services, the greater is personal income. The federal government revenue mechanism, then, is based on both the benefit principle and the ability-to-pay principle or so it would seem at first glance. On the other hand, certain studies on the subject tend to indicate that the incidence of federal personal income taxes falls most heavily on middle income groups.

At this point we can understand that the federal tax system constitutes a means by which the federal government forces a "savings" on the economy in order to effect an allocation of resources into the production of goods and services very probably different from that which would otherwise exist. The tax system is also used to redistribute income into a more equitable pattern. At the same time, the federal government causes changes in its tax revenues and its expenditures in order to effect a demand for that output of goods and services achievable at full employment.



From all of this it can readily be understood that the federal government in carrying out its fiscal policy--its taxing and spending expressly for achieving economic goals--coincidentally satisfies identified needs for public goods and services, but because it does so, profoundly influences the output of goods and services satisfying privately identified needs; that is, it affects what is produced for the private market. Its fiscal policy also influences the growth of the economy, not only in the direct manner in which its demand for certain types of goods and services affects investment, but indirectly by the way in which its taxing affects savings and investment in general, and even more indirectly, the way taxing and spending influence induced investment by impinging upon consumption patterns.

The economy has grown as the result of the private saving that has made investment in productive capital possible, and as the result of available resources, a growing population and technological innovation that oriented potential investment. The character of our technological growth, however, was shaped by the economic policy of the federal government. For example, the natural resource income tax depletion allowance has most certainly encouraged the growth in the automobile industry and the petroleum industry in addition to encouraging the vast suburban residential construction boom. The depletion allowance probably contributed to the demise of the railroad system by making the trucking system somewhat more economical. Was it to our long-run advantage to have

cheap gasoline, or would we now have been better off with higher gasoline prices, smaller autos, less environment pollution and perhaps viable mass transit systems?

### 3. Impact of Policy Changes

An industrialized economy being dynamic in nature requires relatively continuous adjustments in government expenditures and revenues. Those adjustments constitute fiscal policy implementation, and as brought out so far in this chapter, are made in response to changes in the demand for public goods and services. An elevated threat to our national security calls forth increased defense spending. The intensified flight of urban residents to the suburbs brings about increased federal spending on urban renewal. Increasing intercity automobile and truck traffic requires more federal spending on interstate highway construction and increases in excise taxes. Growing numbers of people ensnared in poverty precipitate changes in transfer payments and tax rates. Government makes such adjustments in expenditures and revenues to effect changes in resource allocation and income distribution. But simultaneously, those changes are bound to have an impact on aggregate demand for goods and services, output and employment, interest rates and disposition of income. Thus, adjustments in central government expenditures and revenues affect the stability of the circular flow of the economy. Accordingly, in the face of recurring business cycle undulations, it seems sensible that central government should employ changes in spending and revenues explicitly to bring about desired changes in output and employment.

As brought out already in this chapter, since the Franklin D. Roosevelt administrations, our federal government has increasingly relied on changes in spending and revenues to achieve stabilization objectives.

How do such changes make possible desired changes in output and employment? We recall that taxes are a leakage from the circular flow while expenditures are an injection into the circular flow. Thus, increases in taxes by themselves tend to inhibit the circular flow while decreases tend to encourage it. On the other hand, increases in government expenditures, by themselves representing additions to total demand for goods and services, tend to enlarge the circular flow while decreases in expenditures tend to reduce the circular flow. But central government does not operate in a vacuum, and whatever changes it makes in fiscal operations affect the other injections and leakages of the circular flow.

Accordingly, central government implements changes in compensatory policy to cause desired changes in total leakages and injections in the circular flow. Should the economy be in equilibrium at a depressed level of output and employment, and saving equal to planned investment and government expenditures equal to tax revenue, the government could have an expansionary effect on the economy by running a budgetary deficit either in terms of increased spending or reduced taxes or a combination of the two. Sustained increased spending with no change in income tax rates acts as an injection and as producing firms respond to added government demand, employment and income increase. The multiplier

assures that output in time will expand to some multiple of the incremental increase in government spending. However, in the face of income taxes, the multiplier will be somewhat less than the multiplier of Chapter 6. If we assume some minimum lump sum tax,  $T$ , coupled with a proportional rate  $tY$ , disposable income would be

$$Y_d = Y - [T + tY]$$

and aggregate demand for output

$$Y = a + b [Y - (T + tY)] + I + G$$

from which we derive

$$Y - bY + btY = -bT + I + G$$

$$Y (1 - b + bt) = -bt + I + G$$

or

$$Y = \frac{1}{1 - b + bt} (I + G - bT)$$

$$\Delta Y = \frac{1}{1 - b + bt} \cdot \Delta G$$

which shows the eventual increase in output while recognizing the impact that income taxes have on realized income in reducing the value of the multiplier.

As output, income and demand increase by diminishing amounts in successive periods, the original disparity occasioned by the sustained incremental increase in government expenditures gradually disappears as both income tax revenue and saving increase.

In time, other things being equal, an equilibrium should be struck between the leakages, taxes and saving, and the injections, government expenditures and investment at a higher level of output and employment. We know, however, that things do not remain as they are; as producing firms realize increasing sales, they tend to increase investment in plant and equipment. At the same time, the original incremental increase in government spending financed as it is by borrowing from the private economy will cause interest rates to rise from what they are in depressed equilibrium. For the moment, let us set those considerations aside and return to them later. A reduction in income tax rates in themselves, expenditures remaining the same, is expansionary since disposable income increases. However, individuals set aside some part of disposable income as saving so a deficit created by a tax reduction is not as expansionary as a like deficit created by an increase in expenditures alone. There is, too, an element of uncertainty about the expansionary effect of a tax reduction because individuals and families vary the proportions of disposable income they allocate to consumption and saving. How they view the future influences what proportion of income they save. If optimistic, they tend to save less, if pessimistic, they tend to spend less on consumption. Interest rates, too, affect savings plans; and in conjunction with a tax cut if interest rates rise, saving tends to grow and thus reduce the expansionary impact of a tax cut.

We know that in the upswing of the business cycle, demand for output tends to outstrip the ability of the economy to produce

goods and services. Near the peak of the cycle, utilization of plant capacity is high and invested additions take place at a rate more slowly than the rate of increase in demand. Prices and wages begin rising. One way in which the inflationary effects of cyclical peak can be moderated is by a contractionary change in government spending and taxing. The multiplier is always at work, and any reduction in spending or increase in taxes has a multiple impact on the circular flow just as do expansionary changes. Thus, upward pressures on prices and wages can be relieved by reduced government demand for goods and services or increased taxes or a combination of the two.

However, tax increases and cuts in government spending in boom times are not as easily carried out as tax reductions and increases in spending in depressed times. Political parties avoid associating themselves with tax increases and generally a tax increase is enacted long after the need for it materializes. This is nothing more than a reflection of the resistance among individuals and producing firms to a tax increase regardless of what the circumstances are. We should remember, too, that government expenditures for goods and services provide income in one way or another to individuals in the economy. Fiscal programs develop their own constituencies and whenever a proposal to cut government spending is made, it poses a threat of reduced income and unemployment to certain of the producing firms and individuals in the economy. Tax increases by themselves tend to have an uncertain impact on the circular flow for the same reason that tax reductions do:

consumption and saving propensities may change in the face of tax changes. For these reasons, fiscal policy is not the effective weapon for contractionary purpose that it is when employed for expansionary purposes.

#### 4. The Federal Budget and Its Implications

When considering fiscal policy changes and their impact on the economy, one must realize that there are lags from the time the need for a change is perceived by policy makers until the consequences of the change are evident. Thus in the parlance of the day there is the recognition lag, the implementation lag and the response lag. We have touched on lags indirectly and have devoted some space to the response of the economy to monetary policy changes. It is worth our while now to emphasize more directly that policy changes do not spring forth instantaneously, invoking the immediate commencement of the chain-link series of events.

As the economy goes through the business cycle; levels of output, employment and income or rates of change in prices are reached which precipitate proposals for changes in government spending and revenue. Of course, at any one time, the economy is operating under the influence of policy changes designed and implemented in the past to correct problems existing then. Be that as it may, current problems call for current changes. Once the need for a change is recognized by either the Administration or Congress, there is an interval of time, occasionally quite lengthy, before legislation emerges. However, even with authorization and appropriations, still further time will elapse before a program for

expenditure changes is implemented, and in some circumstances before a tax change takes effect. All the while the economy continues on its way, and it may very well be that the conditions precipitating the policy change no longer exist when the change is implemented, or if they do, that they are modified from what they were. Accordingly, the economy's response will be different from what it would have been had conditions remained the same.

Thus, the effectiveness of fiscal policy rests in part on how sensibly it is designed for the conditions in the economy at the time it is implemented.

This suggests that fiscal policy based on erroneous assumptions about future conditions can be destabilizing and aggravate a downturn or add to inflationary pressures in an upturn. Proponents of a small public sector emphasize the potential for destabilization that discretionary fiscal policy changes have. Their focus leads them to conclude that in depressed times central government should cut taxes to stimulate demand for output, and in times when demand exceeds output at current prices, the government should cut expenditures. Proponents of a large public sector, emphasizing the need for government to influence income distribution and resource allocation, conclude as might be expected, that government should increase expenditures in depressed times and increase taxes in boom times.

Those who are advocates of a small public sector are in league with those who emphasize the effectiveness of automatic stabilizers. They point out, too, that the private economy itself



complements the automatic stabilizers of government through changes in saving patterns.

In the United States, fiscal policy implementation originates in the executive branch with a proposed budget for the prospective fiscal year. By Congressional action the budgetary proposals eventually result in authorization and appropriations bills which when signed by the President become the law of the land and enable the federal government to carry out its programs. Changes in tax revenue and levels of spending determine whether the government runs a surplus or a deficit. There are three basic versions of the federal budget. We have already become acquainted with the national income accounts budget which is expressed in conformance with the way national income accounts are summarized on a calendar year basis. Accordingly, taxes are recorded as collected when tax liabilities are incurred and government expenditures are assumed to take place when government agencies take delivery of purchases.

But the unified budget based on the fiscal year and essentially a cash budget is the official budget of the federal government. The unified budget shows the extent of a fiscal year and essentially a cash budget is the official budget of the federal government. The unified budget shows the extent of a fiscal year surplus or deficit, but the misleading inferences that could be drawn from a current surplus or deficit lead policy makers in the Kennedy administration to rely on the full-employment or high-employment budget to assess the impact of fiscal policy changes.

The high-employment budget takes account of the economy's capacity to produce and the changes that would take place in federal tax revenue and expenditures with current tax rates and formula expenditure commitments to predict whether a surplus or a deficit would result were the economy to attain a high rate of employment. Obviously, a high-employment deficit would be expansionary while a high-employment surplus would be contractionary.

The high-employment version of the budget enables policy makers to isolate the impact that current economic conditions have on tax revenues and expenditures. A current deficit in depressed times would on its face suggest an expansionary policy, but because of our progressive income tax system, and social welfare programs such a deficit could reflect a restrictive policy. When income falls off in a recession, tax revenues fall proportionately more; when unemployment rises, social welfare payments, including unemployment compensation rise. Thus, a budget incorporating a current deficit could if translated into a high employment budget reflect a surplus. On the other hand such a budget could reflect a high-employment deficit.

The progressive income tax system and the nature of social welfare programs of the federal government impart an automaticity to the compensatory impact that existing fiscal policy would have, in the absence of any changes, on economic conditions. As discussed above, we can see that when the economy is in recession, tax revenues in falling off and transfer payments in building up, prop up falling disposable income and sagging demand for output.

When the economy is expanding, income tax revenues build up at a more rapid pace, and transfers fall off, the two together dampening the demand for output and pressure on prices that otherwise would take place. Thus, our progressive tax system and social welfare programs are automatic stabilizers which take effect during business cycle undulations without any change in fiscal policy itself.

Whether or not the automatic character of policy implementation would be sufficient by itself to contain business cycle undulations within reasonable bounds is a matter of debate between Monetarists and Keynesians. As one might expect, Monetarists generally believe that fiscal policy initiatives which result in deficit increases aggravate problems in unemployment and inflation. They emphasize the lags in fiscal policy implementation from problem recognition to final impact which in their view cause policy changes to take effect when the reason for which made probably has disappeared. They also believe use of overt fiscal policy changes related to current deficits causes the federal government to encroach upon the private economy by taking over tasks the economy is better suited to do for itself. But just as importantly, they believe federal deficits absorb some of the economy's saving which would otherwise finance planned investment leading to higher productivity, improved employment prospects and lessened inflationary pressures.

Doubtlessly, government deficits do affect conditions under which private investment is financed even in depressed times; but Keynesians, in focusing on the prospects for equilibrium at

depressed levels of output and the impact that the marginal efficiency of investment has on planned investment, believe current deficits in excess of that precipitated by economic conditions make up for deficient demand and eventually lead to induced investment on the rise in output and employment.

In keeping with their basic views, if fiscal policy changes are to be made, Monetarists believe taxes should be cut when times are bad to encourage private demand, and that spending programs should be reduced when the economy is expanding to make room for private consumer and investment demand. Keynesians, as outlined above, call for increased government expenditures in depressed times, and advocate a policy prescription of increased taxes to contain inflationary pressures in the latter stages of expansion in the business cycle.

In depressed times, if private investment is basically insensitive to interest rate changes and the demand for money is interest elastic, deficit spending wrought by increased federal expenditures or reduced taxes is more effective than money supply increases. Keynesians believe that in depressed times, the demand for money is indeed interest elastic and even if investment were sensitive to interest rate changes, monetary policy cannot significantly affect interest rates, thus fiscal policy changes must be relied upon to encourage output and employment. Monetarists, as we have seen, looking upon the demand for money as relatively stable, relate changes in output and employment to money supply changes.

## 5. Financing the Federal Deficit

Whenever the federal government spends more than it realizes in tax revenue, it must borrow to make up the difference. The U.S. Treasury, as the federal government's agent, is enabled to borrow by specific statute. As annual deficits successively add to the total federal debt, the Treasury's authority to borrow must be increased accordingly. The Treasury borrows by issuing short-term bills, intermediate notes and long-term bonds and marketing them through the Federal Reserve banks to the economy at large. The Federal Reserve Open Market Account itself by law cannot have more than \$5 billion in its possession which it has purchased directly from the Treasury, but it does act as the Treasury's agent in sales and auctions of the latter's securities. Thus, the Treasury sells its newly issued debt to institutions, firms and individuals. The circumstances under which the Treasury issues new debt and the monetary policy of the Federal Reserve in effect at the time determine the impact of a deficit on monetary conditions. In depressed times when the financial intermediation system has substantial excess reserves, federal deficits absorb idle balances as buyers trade money for Treasury securities. In Keynesian terms, interest rates are not noticeably affected, the the Treasury's deficits do not thwart private investment plans, particularly if private investment is relatively interest inelastic. Under other circumstances, however, federal deficits and their financing affect the economy differently.

In the expansionary phase of the business cycle, a federal deficit poses a dilemma for the Federal Reserve Board of Governors.

It can accommodate the deficit by an open market policy that pumps money into the economy in exchange for already existing U.S. Treasury debt. It does this to hold down interest rates for the moment and to provide a continuing source of financing private needs in the expanding economy. But federal deficits in the expansionary phase of the business cycle which are supported by the Federal Reserve are sure to increase growing inflationary pressures in the economy. The Board of Governors realizes, too, that continued federal deficits and the inflation they generate will eventually force it to abandon its accommodation and revert to a restrictive monetary policy leading to a collapse of demand and employment. On the other hand, if it does not support federal deficits at all, it may avoid a build up of inflationary pressures, but it must accept higher interest rates and an early disintegration of a business recovery. Deficits, in other words, do matter and the extent to which they are supported by monetary policy profoundly affects economic conditions.

In summary, increases in government expenditures and reductions in government taxes are expansionary in nature, but there is a greater certainty about the impact of expenditures. Decreases in government expenditures and increases in government taxes are contractionary in nature, and the uncertainty of impact of tax changes remains. While fiscal policy is an effective expansionary weapon, its use as a contractionary influence on the circular flow is inhibited by political considerations. With respect to expansionary effects of changes in expenditures and

taxes, it should be observed that a balanced budget increase in the two is expansionary in effect, since by virtue of reduction in both consumption and saving that increased taxes have, a like increase in government expenditures is a greater injection than the resultant leakage is.

Although the industrial economy is erratic in nature, it does have inherent though mild elements of stability. Changes in investment by producing firms tend to move in the same direction as changes in their profitability. When revenues are high and profits are up, firms tend to increase investment; when revenues fall and profits are down, firms tend to reduce investment. Increases in leakages by way of retained earnings are compensated for by increases in injections, and decreases in investment are compensated for by decreases in retained earnings. When national income falls, too, the individual saving leakage out of disposable income tends to fall, and when income rises, the saving leakage tends to rise. These two phenomena tend to act as automatic though weak stabilizers of the circular flow of the economy.

Since the 1930's, in the United States, fiscal policy also has incorporated two automatic stabilizers. The progressive income tax causes federal tax revenues to fall more rapidly than does national income in the downswing of the business cycle and increase more rapidly than does income in the upswing of the cycle. On the other hand, government transfer payments increase in the downswing and fall off in the upswing. In the absence of any overt changes in fiscal policy, progressive taxes and transfers automatically

moderate to some degree the undulations of the business cycle. Experience teaches us, however, that automatic variations in saving both personal and corporate, investment, taxes and transfers by themselves are not enough to maintain an industrial economy on a course of moderated undulations in long-term economic growth.



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## INTERNATIONAL TRADE

1. Comparative Advantage

We live by what we produce; thus, our ability to produce determines how well we live. However, because of the uniqueness of an economy's productive capability, it is unnecessary for it to limit its consumption to that which it can produce itself. Rather, its unique capabilities enable it to trade some of what it produces to other economies for some of what they produce to the mutual advantage of all. The gain that a national economy can realize from international trade is a reflection of the comparative advantage it has in producing what it trades. Comparative advantage is rooted in the internal exchange ratios of output products. Thus, the less an economy has to give up of some products to produce alternatively an increased quantity of some given product in comparison with some other economy, the greater is its comparative advantage in producing that product.<sup>1</sup> By the same token, the other economy is bound to have a comparative advantage so that it is to their mutual gain for each to produce that output in which it enjoys the advantage and trade with the other for the outputs in which it is

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<sup>1</sup>In considering internal exchange ratios, we must remind ourselves that we do not barter goods and services directly one for the other, but determine their exchange ratios according to their prices we decide upon through our market institutions. We must also remind ourselves that at any one time our productive capacity, obviously to produce more of one good we must reduce the output of some other good or goods. How much of the latter must be given up in order to increase by one unit the output of the former is a function of the technical characteristics of our economy.

at a comparative disadvantage.<sup>2</sup> In this respect, it makes no difference that one economy may produce each of its goods and services more efficiently than the other. That is to say, it makes no difference that one economy has an absolute advantage over the other; so long as their internal exchange ratios differ, each is bound to have a comparative advantage in some of its products over the other. An economy with superior technology, a relatively skilled labor force and a relatively greater endowment of natural resources cannot have a comparative advantage in the output of all products demanded in the marketplace and so it can gain by trading for those products in which it is a comparative disadvantage with products in which it has a comparative advantage.

Table 16-1 is a common way of illustrating the capabilities of two countries in producing two products.

<u>Country</u>	<u>Population in Millions</u>	<u>Output per Capita</u>		<u>Internal Exchange Ratio</u>	
		<u>Autos (Units)</u>	<u>Food (Tons)</u>	<u>Autos/Food</u>	<u>Food/Autos</u>
A	10	2	8	1/4	4
B	1	1	6	1/6	6

Table 16-1. Two Economies with Their Unique Characteristics

It is easy to see that country A is more populous and superior in its ability to produce both products, autos and food,

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<sup>2</sup>For an expanded discussion of the theory of comparative advantage, see, for example, Root, F. R., International Trade and Investment, Cincinnati: Southwestern Publ. Co., 1978, pp. 28-59.

in comparison with country B. It would appear at first glance that country A would gain nothing by trading with country B. A can produce more autos or more food or any combination of the two per capita than can B. Yet we observe that the internal exchange ratio of tons of food per auto is 4 to 1 in A, while it is 6 to 1 in B. Evidently, A has a comparative advantage in autos; that is, to produce each auto, A gives up to 4 tons of food that it could otherwise produce while B gives up 6 tons of food. B obviously has a comparative advantage in food; for each 24 tons of food it produces, it gives up only 4 autos while for the same production of food, A must give up 6 autos.

If each country were to produce only that produce in which it has a comparative advantage and trade with the other for the other product, both countries would realize a gain in total consumption over that in the absence of trade with each attempting to satisfy its needs with its own productive capabilities. We must understand, however, for each to realize a gain the exchange ratio between them of food and autos must fall between the two internal exchange ratios. Certainly A would not benefit if it were to exchange one or more autos for each four tons of food, and B would not benefit if it were to exchange 6 or more tons of food for each auto. However, if by one way or another the two agreed on an exchange ratio of 5 tons of food to 1 auto, each would gain from trade with the other. The potential gain to each with the external exchange ratio can be seen in Figures 16-1 and 16-2.

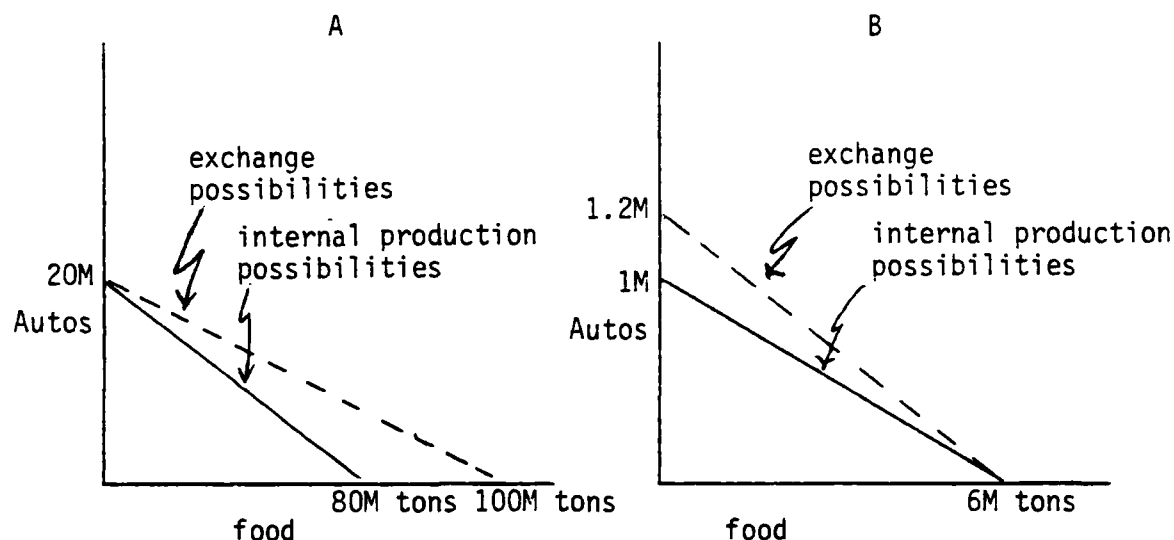


FIGURE 16-1. Output of Country A. FIGURE 16-2. Output of Country B.

The two graphs tell us that if A produced autos alone and could exchange some of what it produced for food, it would realize a greater consumption of the two than if it were to produce the two with its own capabilities and not exchange. If B were to produce food exclusively and trade some of it, its total consumption could rise above that possible from its own production of both autos and food. Of course, A is much larger than B, and it is readily apparent that A can trade only a fraction of the autos it is capable of producing for the food B is capable of producing and can make available for trade outside its own needs. Is it possible under the circumstances for mutually beneficial trade to take place? Let us suppose that B's consumption of food is two tons per capita. B could produce 6 million tons of food, set aside 2 million tons for its own consumption and trade the remaining 4 million tons for 800,000 autos. If it were to produce both food and autos to the exclusion of trade, its output would be 2 million

tons of food together with only 670,000 autos. Trade definitely benefits B. Now, let us suppose that A's consumption of food is 3 tons of food per capita. If A were to trade 800,000 autos for 4 million tons of food, it would still have to produce 26 million tons of foods from its own capabilities. With trade, it could realize an output of 30 million tons of food and 12.7 million autos. If it were to avoid trade, it could consume 30 million tons of food but only 12.5 million autos. Obviously, trade benefits A as well. We observe, of course, that the gain for B is much more dramatic than that of A; nevertheless, they both gain. If the two economies were more nearly equal in population, the gain for A would be relatively larger, but since B's tradeable output of food is only a fraction of A's total demand, B's comparative advantage in food has only a limited improvement in A's total consumption. In trading with B, A must still produce more than 85 percent of the total food it consumes.

National economies each produce more than one or two products, and the more advanced economies such as the United States produce vast arrays of products in some of which they hold comparative advantage and thus are motivated to trade with one another for the gains that they can achieve. The gain that an economy realizes from international trade depends on the terms of trade and the volume of trade. For a gain to be realized the external exchange ratio in a product in which an economy enjoys a comparative advantage must be more favorable than its internal exchange ratio with other goods. Thus, for A to be motivated to

trade autos to B for food, the exchange ratio of tons of food for autos would have to exceed 4 to 1; and for B to trade food to A for autos, the exchange ratio of autos for tons of foods would have to be more than 1 to 6. The more generous the terms of trade relative to the product in which an economy has a comparative advantage the greater is its motivation for international trade. The terms of trade reflect the elasticities of demand for traded goods together with the complicating conditions of supply. Our example does not incorporate peculiarities of supply, but they play an important part in the trade of goods for one another. Where an economy trades a good it produces to another economy also capable of producing the good, the more competitive the conditions in the latter, the more likely is it that the terms of trade will work in its favor as the volume of trade increases.

## 2. Barriers to Trade

The benefits of free trade notwithstanding, national economies do erect barriers of one sort and another to limit the volume of imported goods and services. Why do they do this? The reasons are varied. While the exchange of goods and services reflecting comparative advantage works to the mutual benefit of those nations trading with one another, established domestic industries that are forced to compete with imported products must give up some of the markets they would otherwise have to themselves. In the face of increased trade, domestic industries producing goods in which they are at a comparative disadvantage vis-a-vis foreign competition could be seriously damaged or wiped

out altogether. Consequently, even though the economy as a whole would benefit in time from the availability of imported goods at lower prices, the political pressures that affected domestic industries can bring to bear on the central government result in some sort of restrictions on competing imported goods.

In this respect, the fact that imported goods in competition with domestic goods are available at lower prices does not mean that there is an immediate net gain for an economy. While consumers realize an increased real income as the result of lower prices on imported goods, affected domestic industries in giving way to foreign competition, produce less output and employ less labor. Therefore, at any given moment in time, a sudden increase in the importing of some good precipitated by a newly created comparative advantage of the exporter would bring about lay-offs and increased unemployment in the affected domestic industry. At the same time, some in-place plant and equipment would now lie idle and their invested cost perhaps could not be completely recaptured. Given the immobility of labor and capital, whatever gains might be realized by consumers as a whole would be of at least partially reduced by the losses in the affected domestic industry.

The problem is exacerbated, too, because the impact is concentrated on the domestic industry and reduced employment would mean that some in the labor force would lose income all together, and possibly some producing firms would go out of business all together, precluding the recapture of invested capital all together by their owners. Were labor and capital perfectly mobile,



malleable and adaptable, the problem would be of minor proportions or perhaps would not exist at all, but such is not the case; perfect competition reigns not in the industrial world. Only in rare instances, can labor let out of work in one industry, move with no loss of income to new employment. Only in rare instances can capital idled by reduced output be engaged to produce different output at no sacrifice to its invested cost. The transition from one industry to another is very likely to be long and painful, and in some cases may never occur at all. So there is some justification for the protection of domestic industries from foreign competition. Yet the advantages to international trade are such that national economies achieve measurable gains when they work towards the increased exchange of goods and services with one another. The rigidities, specifications and immobilities of labor and capital require that lessening of trade restrictions be deliberate and at a moderated pace but persevering nonetheless.

One might ask if the bent towards avoiding trade restrictions has been at all persevering, why they still exist to the degree they do. We can again observe that the world of economics is not static; conditions are always changing and from time to time national economies are subject to stunning shocks. Wars occur and devastation results. Central governments miscalculate in compensatory policy and depression follows. Spectacular technological advances in one country suddenly change the direction of comparative advantage. Governments seek unilaterally to change the terms of trade in strategic resources and industrial uncertainty

increases. When shocks like these occur, central governments invariably resort to protectionism in the form of quotas or tariffs as a means to effect economic recovery. Once in place those restrictions in trade can only gradually be brought down again. The nature of investment itself also leads to increases in protectionism from time to time. As inventions and innovations are seized upon in one economy to produce output more efficiently or to produce entirely new but desired output, the domestic industries of some other economy are certain to be affected in the absence of trade restrictions. Under such circumstances, trade barriers are just as certain to make their appearance.

For the less-developed nations of the world, the argument is advanced that tariffs are necessary to protect infant industries from developed foreign competition in order that those industries can grow and become as efficient in their output as the foreign suppliers they are designed to replace. Whether or not there is any substance to the argument, less-developed economies do impose tariffs on manufactured goods of advanced economies. However, those tariffs generally precede industrialization in a less developed nation and are imposed to limit imports to that volume for which the nation can trade its own goods or services. When industrialization does occur, it takes place by and large with the capital and operating know-how imported from advanced economies. To a great extent capital and the ability to operate it are made available because of the potential returns that are anticipated from their investment in a less-developed economy.

In this respect, the lack of economic growth in many less-developed economies is exceedingly difficult to overcome. Those countries have little in the way of natural resources to trade for the finished output of the industrialized world and having only primitive means and a harsh climate cannot produce agricultural output in sufficient volume or efficiently enough to feed their own population and simultaneously to exchange it for manufactured goods. Economic growth would depend upon the unlikely development of unique manufacturing skills sufficiently superior to overcome transportation costs of imported raw materials and exported finished goods so that they would have a comparative advantage in the production of certain finished goods. The economic growth of Great Britain is not dissimilar from that sort of development. However, preceding the Industrial Revolution, that country was already a relatively advanced economy in terms of development at that time and had absorbed and was absorbing a vast oversea colonial empire rich in natural resources.

Other nations, the USSR and China in particular, with vast stores of natural wealth, lay in the backwaters of economic development until recent times. The USSR has gone through an industrial revolution of its own whereby it has acquired the industrial base to produce manufactured goods in volume and to upgrade agricultural methods in enhancing farm output. Prior to its industrial transformation, it was essentially an agricultural economy depending upon inefficient and outmoded methods for its output. Today, the standard of living in the USSR is appreciably

higher as a result of its industrialization. Primarily for considerations of what it identifies as national security, it limits trade with other industrialized economies. If it were to deemphasize self-sufficiency and increase trade with other national economies, undoubtedly in the long term it could increase its standard of living over what it otherwise would be.

The USSR is not alone in restricting trade for international security considerations. Other industrialized economies, the United States included, encourage, support and protect industries critical to military prowess. They eschew dependence, where they can avoid it, on other countries to supply goods and services, intermediate or finished, essential to the production of war hardware where the possibility exists that they might suddenly be cut off from those sources, and subject to international blackmail for their survival. Thus, national security is another compelling reason for a national economy to impose restrictions on the free exchange of goods and services with other economies.

Foreign trade policy of the United States government has been influenced by the above considerations. In the last 25 years, this country has experienced the many-sided impact of changing comparative advantage in textiles, steel, electronics, machine tools and automobiles among yet other products. We have imported increasingly more of these products to the detriment of domestic producers. For the affected industries, the result has been concentrated unemployment over extended periods of time and massive capital losses. On the other hand, very probably, the real income

of the economy as a whole has been increased by lower product prices for products in which trade has taken place. At the same time, those countries from whom we have imported goods and services, naturally have had to import goods and services from us, so that some domestic industries have benefited from increased imports competing with domestically produced goods and services.

In this respect, however, foreign economies, in some instances, notably Japan and West Germany, have not imported finished products from us but instead have increased their ownership of U.S. wealth in exchange for the products they have exported to this country. Obviously, privately motivated foreign investment takes place only in anticipation of a return greater than other alternatives. So the exporting of our capital base, so to speak, in exchange for finished products of other economics is not detrimental in itself. Conceivably, increased foreign ownership could lead to grave problems in national security and eventually to loss of national identity. But on the scale by which it has thus far taken place, foreign ownership of land and productive facilities in the U.S. poses no problem. At the same time, private investment in the rest of the world by U.S. firms is indeed significant. Needless to say, U.S. ownership of their wealth has stirred passionate xenophobic feelings in many countries around the world.

In consideration of our own well-being, the United States government significantly influences the trade that this country carries on with the rest of the world by trade restrictions and by

treaties with other countries. Other countries, too, seek treaty arrangements with the rest of the world to enhance prospects for economic and national survival. Groups of countries as in Europe, the Western Hemisphere and Asia also get together to reduce trade restrictions among themselves to their common advantage. Since 1947, the United States has been a signatory to the General Agreement on Tariffs and Trade involving more than 80 nations dedicated to promoting trade among themselves through periodic negotiation conferences.<sup>3</sup>

### 3. International Payments

Goods and services are not bartered for one another among countries any more than within countries, but, of course, are exchanged for one another indirectly through the transfer of claims to national currencies. In international trade, an economy accumulates claims to foreign currencies from its exported goods and services to other economies. It uses those claims to import goods and services from them or as appointed out to invest in them. Until fairly recent times, full-bodied coins were used to transact international trade. In the seventeenth century during the heyday of Mercantilism, the trading economies of Europe sought to maintain a "favorable balance of trade" according to which a national economy should strive to accumulate gold and silver in exchange for its produced goods. As we shall discuss in succeeding paragraphs, no

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<sup>3</sup>See Root, F. R., pp. 171-183.

national economy can for long persist in exporting goods and services to the exclusion of importing them in one way or another.

Long after Mercantilism passed into history, gold continued to be the dominant factor in the monetary exchange system of the emerging industrialized world. It circulated freely throughout the nineteenth century and the early part of the twentieth century, and trading economies used it as a settlement between import and export accounts. By the latter part of the nineteenth century, the industrialized world was on an international gold standard. In the era of free trade, the accumulation of gold was no longer sought as an end in itself, but the metal came to be relied upon as a device for balancing the trade of goods and services. In general, under the international standard concept gold served as a backing for national currencies. Whenever a nation's imports exceeded its exports, a gold drain would ensue causing domestic monetary conditions to become restrictive and domestic prices to lag those of other trading nations. The relative change in domestic prices and prices of imports would tend to reverse the imbalance between imports and exports, and gold would now tend to flow back into the domestic economy.<sup>4</sup>

Gold was looked upon as a means of maintaining disciplined domestic monetary conditions while encouraging the free movement of goods and services among trading nations. However, the disruptions

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<sup>4</sup>This discussion of arrangements for international payments, considering the true complexity of the subject is cursory at best. For the reader who would like to pursue his study further, the references at the end of this chapter are recommended.

in resource allocation and concurrent financial demands for war material of World War I caused most of the industrial world to abandon the gold standard in favor of a gold exchange system. In the ensuing 30 years, through boom times and bad, trading nations indulged in competitive currency devaluations and exchange restrictions in order to free their domestic monetary and fiscal policies from the restraints imposed by strict adherence to an international gold standard while seeking to maintain favorable export markets. In world-wide depression of the 1930's, the demands for expansionary policies further aggravated this general tendency. The circulation of gold as a medium of exchange and the private ownership of gold bullion by U.S. citizens was made illegal in the U.S. in 1933, but the country continued to use gold as means to settle international accounts. With the approach of World War II, movements in trade and claims on U.S. currency were such that the U.S. government accumulated some \$33 billion in gold.<sup>5</sup>

During the war, in an attempt to preclude a return to the competitive currency devaluations of the inter-war period and to encourage stable growth in international trade, the Allied nations reached agreement on a fixed exchange rate system of international payments based on a gold exchange standard. The agreed-upon treaty of 44 signatory nations created the International Monetary Fund which constituted an international lending agency for accommodating trade among member nations. Each member was required to contribute

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<sup>5</sup>Culbertson, J. M., Money & Banking, New York: McGraw-Hill, 1977, pp. 458-88.



a quota made up of 75 percent of its own currency and 25 percent in gold for the use by the Fund. A nation's quota was and is based on the relative volume of its trade, and also determines the voice the nation has in managing the affairs of the Fund.

The IMF uses the currencies and gold put at its disposal to make loans to member nations through their central banks or counterpart organizations for reconciling imbalances in their international trade. Loans run for a maximum of five years. Until 1971, the exchange rates of member nation currencies were fixed and could be adjusted at any one time by only two percent, and under extraordinary circumstances with the approval by the Fund by ten percent. The United States dollar played a key role as the international reserve currency that was used as a means of payment throughout the world and was freely convertible into gold by the U.S. Treasury.

The IMF fixed exchange rate system tended to impose limitations on a member nation's domestic policy. Under the system, to avoid monetary crises a nation had to control its money supply growth in such a way that it reflected relative changes in the demand for its exports. During the years following World War II when much of the industrial world was recovering from the devastation and disruption caused by that conflict, the dollar was much in demand by all nations. Consequently, the growth in the U.S. money supply was not inhibited by the fixed exchange rate system as it otherwise might be. But little by little, as the rest of the industrial world recovered, the demand for the dollar as an international payments mechanism deteriorated. The chronic annual

deficits of the U.S. in international payments were accepted with increasing reluctance and resulted in growing diminishment of the U.S. gold stock. Eventually in 1971, the U.S. was forced to devalue the dollar and repudiate further convertibility of its currency for gold. From that time, the fixed exchange rate system of the IMF quickly came undone. Today, the international system of payments is based on flexible exchange rates.

The IMF continues to exist but its importance to international trade has been lessened following the collapse of adherence to fixed exchange rates. The fixed exchange rate system required that treaty nations maintain working reserves of other countries' currencies. As brought out in the preceding paragraphs, that need impinged on domestic policy, and from time to time when a country could not reconcile domestic policy with trade realities, it could turn to the IMF for the reserves it needed to settle international accounts. In the meantime, it would have to somehow adjust domestic conditions to eliminate its payments discrepancy. When relatively minor economies had recurring foreign reserve problems, the IMF fixed exchange rate system was not threatened, but when the United States could not resolve its payments deficits problem, fixed exchange rates could not be perpetuated.

#### 4. The Payments Mechanism

It should be understood that the IMF and other international payments agencies are not the main channels through which international transactions take place. They act to provide the means of payment through loans to countries faced with temporary

disruptions in their ability to meet payments in foreign currencies from receipts exported goods and services and loans or grants directly negotiated for.

It is important to understand too that it is the commercial banking structure which for the most part accommodates the foreign trade of a nation. When payment imbalances occur, commercial banks find themselves short of foreign reserves and turn to the central bank. The latter in turn relies on its ability to borrow from the central banks of other nations or from a reservoir such as the IMF. All in all, the Fund represents a small part of the payments related to international trade but a very important one.

Trading economies transfer claims against one another's currencies arising from international trade through an international banking network. That network to a large extent is made up of the very commercial banks that serve the domestic circular flows of economic activity. An industrial economy, of course, is not some amorphous being from which demands for imports and supplies of exports emanate in an untraceable fashion. Producing firms, institutions and individuals express their demands for imports directly on foreign sources or indirectly through trading middlemen. They pay for those imports by converting their domestically denominated commercial bank deposits into appropriate foreign denominated deposits. Obviously, the banks must have a means of converting domestically denominated claims against them into claims

on foreign currencies, or alternatively, simply transferring ownership from domestic buyers of imports to foreign suppliers.<sup>6</sup>

The fact that the value of imports for one economy at given prices may not be equal to the value of its exports in any one year suggests that there must be some means to reconcile the difference. When one currency is traded for another to effect a transaction in goods or services, a rate of exchange one for the other determines how much of the one must be given up for the other. In a system of flexible exchange rates as is in general implementation in the industrial world today, changes in exchange rates reflect the relative changes in demand for goods and services among trading nations.

Accordingly, if demand for imports in an economy begins to outpace the demand for exports the exchange rate of its currency for other currencies is bound to fall. That is, more of its currency must now be given up for any given amount of the currencies of its trading partners. If import demand begins to lag behind export demand, the exchange rate of its currency will rise.

Seemingly, with flexible exchange rates there is no need for the financial intermediation system of a trading economy to maintain reserves of foreign currencies. In practice, however, there is a need for reserves much in the same way that there is a need for a commercial bank to keep cash reserves against deposits, or for a producing firm to have working capital or for an individual to maintain a minimum balance in a checking account.

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<sup>6</sup>Culbertson, pp. 413-57.

Sudden, unanticipated demands for foreign currencies arise and must be satisfied; consequently, there continues to be a need for the IMF for that reason alone.

#### 5. The Balance of International Transactions

The trade that an industrialized economy carries on with other nations is complex and involves more than just the movement of and payment for good and services. In general terms, there are also unilateral transfers in the form of private gifts of money and government payments to individuals and foreign governments. The latter are comprised, typically, of such items as social security payments and grants in foreign aid. Besides transfers, continuing flows of claims on national currencies take place by virtue of new investment and the change in ownership of existing investment that national economies effect among one another. Table 16-2 categorizes these elements of international transactions for the United States in the 1976 calendar year.

One can observe that the United States sold more goods and services to the rest of the world than it bought. It could be said that this country had a "favorable balance of trade" in 1981. In isolation of the rest of the transactions taking place that year, trade increased the reserves of financial institutions in the U.S. by several billion dollars. That is, in one form or another, our claims against foreign economies increased by that amount. If those claims were convertible into gold, the vaults of our Federal Reserve System and financial intermediation structure would have held that much more gold at the end of the year. In Mercantilist

days the nations of Europe which a hundred years or so before had emerged from the aftermath of feudalism sought to pile up gold in exchange for exported goods. To a King Midas, the accumulation of gold might be an exciting prospect. But for a trading nation, the accumulation of gold as a long-term objective makes no sense at all, and in the days when changes in the gold stock of a country meant changes in the price level, could not be sustained. At the same time, were inflows of gold somehow to be sterilized, one wonders what might otherwise be done with them. Nevertheless, the mystique of a favorable trade balance lingers on primarily because increases in exports mean increases in jobs while decreases may mean increases in unemployment with the prospect that job losses may never be recovered. By the same token, increases in imports mean decreases in jobs while decreases in imports may mean increases in jobs at home.

It is the specter of unemployment that motivates governments to pursue protectionist policies. Increased foreign competition in the products of various industries translates into a loss of market share for firms producing for the domestic economy as well as for those firms producing for foreign markets. Under increased competition in domestic markets, employment in those firms falls. Of course, the revenue foreign firms realize from increased sales in the domestic economy for the domestic economy's products or capital. Thus, there is a trade-off of sorts in employment in some part of the economy for unemployment elsewhere. However, the trade-off may be lengthy in fulfillment and so

indirect and unapparent that it is not recognized. Because those who lose employment cannot readily find jobs elsewhere, increased imports may cause pronounced pockets of unemployment. In the short term then, an economy suffers in part through increased unemployment even though consumers in general reap the benefits of increased purchasing power. Over the long term, national security considerations aside, there is bound to be a net gain.

Table 16-2. United States International Transactions, 1981  
(Millions of dollars)

Basic Transactions	
Merchandise Exports	+236,254
Merchandise Imports	-264,143
Balance of Merchandise	-27,889
Services Exports	+136,683
Services Imports	-97,670
Balance of Merchandise & Services	+11,124
Unilateral Net Transfers	-7,210
Current Account Balance	-3,914
Direct Investment in U.S.	+21,301
Direct Investment Abroad	-8,691
Portfolio Investment in U.S.	+10,041
Portfolio Investment Abroad	-5,429
Basic Transactions Balance	-8,526
Financing Transactions	
Foreign Official U.S. Assets Change	+5,038
Change in U.S. Reserve Assets	-5,175
Net U.S. Surplus in Payment Balance	137

Source: Federal Reserve Bank of St. Louis, U.S. International Economic Conditions, August 31, 1982, & U.S. Dept of Commerce, Survey of Current Business, March 1983

Protectionist policies, of course, do nothing to shield export industries from incursions into their share of world markets. The counterpart of import barriers is subsidies which

governments from time to time and in various forms provide export industries to give them an advantage in pricing for world sales.

Table 16-2 shows that foreign interests invested over \$21 billion in the United States; foreign ownership in the assets of this country increased by that amount. However, United States firms invested over twice that amount in the rest of the world. It would appear that this country is in little danger of being taken over by foreign interests. International transactions are reflective of the capitalistic system. Apparently among firms in the rest of the world, some believed that from among investment alternatives, profit opportunities were best in the United States. Concurrently, there were United States firms which saw better profit opportunities abroad.

The remaining entries in the table reflect the trading in already existing stocks, bonds and other securities always taking place. Trading in securities is tied to changes in commercial bank deposits throughout the world. Just as trading in securities and changes in ownership of bank deposits take place within the borders of a country so do they among interested parties across international borders.

#### 6. The Circular Flow in the Open Economy

Figure 6-1 on page 101 shows how in the circular flow of economic activity demand for output is traceable to the income which output generates as factors of production are compensated for their roles as productive agents.



We can observe in the figure and from the previous discussion in this chapter that part of total demand for output stems from the exports the open economy trades with the rest of the world in exchange for its goods and services. Obviously, the levels of output and income in the rest of the world and that of the individual economy mutually affect one another. When output and income are high in the economy of a country, imports are bound to be at a high level, because the demand for imported consumer goods and services is a function of disposable income. At the same time, imported goods and services as input factors of production when output is high are bound to be high since total output is a function of its input factors. Export demand, on the other hand, depends on disposable income and level of output of the rest of the world. When they are high demand for the goods and services of the trading economy is bound to be strong.

It is easy to see that trading economies influence levels of output and income of each other. If one economy is enjoying prosperity, its demand for imported goods and services from the rest of the world will add to its level of output and employment, and beyond its initial impact, one economy's demand has successive follow-on effects as the rest of the world's income rises and precipitates demand for the one economy's exports, and so on. By the same token, one economy's recession is certain to be felt in the rest of the world, and the more prominent the economy is in world trade the more pronounced will be the impact of its business recession.

In the days of fixed exchange rates inevitably during the course of the business cycle a conflict would arise between the domestic policy of an economy's central government and the need to maintain a semblance of a balance in payments. For example, in any given country when depressed economic conditions called for expansionary monetary and fiscal policy, demand for imports relative to export demand for one reason or another may have been causing a deficit in the balance of payments. The expansionary policy would only aggravate the problem and put pressure on the country to devalue its currency in order to resolve the deficit. The alternative, very much in conflict with the needs of the economy at the time, would have been a restrictive domestic policy. Which alternative is a government likely to choose? Individually, some countries ran payment surpluses under fixed exchange rates at a time of inflationary pressures related to the business cycle. Restrictive policies applied to contain inflation ran counter to the needs of international trade as surpluses widened even more.

A surplus seemingly is a good thing, but as remarked earlier something must be done with the claims against one country accumulating in another. Under a fixed exchange rate system the central bank of the surplus country ultimately must absorb those claims, demanding gold for them or in effect becoming a lender to the deficit country, but simultaneously as it trades claims against the country for claims against itself, laying the groundwork for an inflationary monetary expansion in its own country.

Under a system of flexible exchange rates in the absence of intervention by a central government to peg the exchange rate of

its own currency, the conflict between domestic policy and international considerations virtually disappears. Exchange rates are related to trade. As the demand for one country's exports falls relative to what it buys from the rest of the world, the rate of exchange of its currency for other falls; as demand rises, the exchange rate rises so that there tends to be a balance in trade. If what it imports from the rest of the world falls off because of business cycle conditions, the exchange rate of its currency rises, discouraging exports as its goods and services become more expensive vis-a-vis those of the rest of the world, and the level of trade comes into balance at a lower level.

In terms of Keynesian IS-LM analysis, under flexible exchange rates, equilibrium levels of interest rates and output are determined by the simultaneous intersection of the two curves into which are integrated net exports and international financial transactions. Under fixed exchange rates, equilibrium would be determined by the two Keynesian curves, a separate zero net exports curve and yet another curve representing a balance in financial transactions. For the United States after World War II, the string of successive deficits posed no problem so long as the rest of the world wanted both dollars, and U.S. goods and services. And even when the relative demand for the latter began to wane, so long as the dollar was convertible into gold, other countries in Mercantilist fashion took dollars in payment for their exports to us. But in 1971 when the U.S. government made the dollar inconvertible, deficits under the fixed exchange rate system of the IMF no longer were tolerable.

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